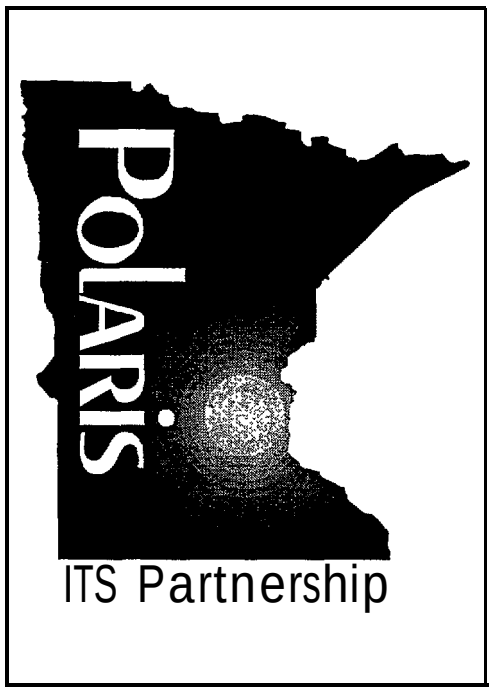
Minnesota Department of Transportation Agreement Number: 73807P

Minnesota Intelligent Transportation Systems

Statewide Intelligent Transportation Systems As-Is Agency Reports for Minnesota



Volume 1
Mn/DOT Metropolitan Division

Prepared for the Minnesota Department of Transportation by:

Lockheed Martin Federal Systems-Owego
Intelligent Transportation Systems
Mail Drop 0124
1801 State Route 17C
Owego, NY 13827-3998

SRF Consulting Group, Inc.
One Carlson Parkway North
Suite 150
Minneapolis, MN 55447-4443

August 1996

Statewide ITS As-Is Agency Report for Minnesota
Volume 1
Mn/DOT Metropolitan Division

Volume 1 Mn/DOT Metropolitan Division
1.1 Generic Closed Loop Traffic Control Signal System
1.2 Mn/DOT Advanced Portable Traffic Management System
1.3 Mn/DOT Portable Traffic Management System
1.4 Mn/DOT Metro Division Lane Closure Information System
1.5 Mn/DOT Metro Division Construction Information System

Volume 2 Mn/DOT Traffic Management Center
2.1 Mn/DOT TMC Ramp Meter System
2.2 MnDOT TMC Video Surveillance System
2.3 Mn/DOT TMC Changeable Message Sign System
2.4 Mn/DOT TMC Communications System
2.5 Mn/DOT TMC Highway Helper AVL System

Volume 3 Operational Tests
3.2 AUSCI - Adaptive Urban Signal Control and Integration System
3.2 ICTM - Integrated Corridor Traffic Management System
3.3 DIVERT Incident Management System
3.4 Advanced Parking Information System

Volume 4 Metropolitan Council Transit Operations and Metro Mobility
4.1 MCTO Trapeze Scheduling/Planning System
4.2 MCTO Automated Passenger Counting System
4.3 MCTO Electronic Fare Collection System
4.4 MCTO TIC BusLine System
4.5 MCTO TIC Customer Phone Line Service System
4.6 Metropolitan Council Metro Mobility Reservation/Scheduling/Dispatch System
4.7 MCTO Construction Information System

Volume 5 City of Minneapolis
5.1 City of Minneapolis Fortran Traffic Signal Control System
5.2 City Of Minneapolis Parking Management System
5.3 City Of Minneapolis Construction Information System

Volume 6 City of St. Paul
6.1 City of St. Paul Computran Traffic Signal Control System
6.2 City Of St. Paul Construction Information System

Volume 7 Minnesota State Patrol
7.1 Minnesota State Patrol Mobile Data Terminal System
7.2 Minnesota State Patrol Laptop Mobile Data Terminal System
7.3 Minnesota State Patrol Emergency 9 11 Dispatch System

olume 8 Miscellaneous
8.1 Minnesota Travel Partners Kiosk System
8.2 Mn/DOT Pavement Condition And Weather Reporting System
8.3 Hennepin County Medical Center Emergency Vehicle Dispatch System
8.4 Metropolitan Airports Commission Parking Management and AVI System
8.5 Gopher State One-Call Excavation Notification System
8.6 Mn/DOT Statewide Construction Information System
8.7 Hennepin County Construction Information System
8.8 Ramsey County Construction Information System
8.9 Mn/DOT ESS Gopher State One-Call Access System

Statewide ITS As-Is Agency Report for Minnesota
Volume 1
Mn/DOT Metropolitan Division

1	**Introduction**		1
2	**Scope**		2
2.1	**Document Overview**		2
2.2	**Methods, Assumptions and Procedures**		2
	2.2.1	System Identification	2
	2.2.2	Data **Collection** Guide	3
	2.2.3	Field Data Collection	3
3	**As-Is Baseline System Documentation**		5
3.1	**Mn/DOT Metropolitan Division**		7
	3.1.1	Generic Closed Loop Traffic Control Signal System	9
	3.1.2	Mn/DOT Advanced Portable Traffic Management System	25
	3.1.3	Mn/DOT Portable Traffic Management System	35
	3.1.4	Mn/DOT Metro Division Lane Closure Information System	49
	3.1.5	Mn/DOT Metro Division Construction Information System	63

Appendices

Appendix A As-Is Agency Report for Minnesota Pre-Survey Candidate List

Appendix B As-Is Agency Report for Minnesota Data Collection Guide

Appendix C As-Is Agency Report for Minnesota System Documentation Attachments

1. INTRODUCTION

The purpose of the Polaris Project is to define an Intelligent Transportation Systems (ITS) architecture for the state of Minnesota. An architecture is a framework that defines a complex system, in terms of a set of smaller, more manageable systems which are fully defined in terms of their individual boundaries, functions, physical components, and interfaces. They illustrate how each of the systems interrelate and contribute to the overall ITS objectives and requirements.

A well defined architecture provides many benefits for a complex system. It defines and optimizes the location of system functions. It identifies critical interfaces, and illustrates how associated systems can be integrated to share resources and information. It establishes standards for communications and physical components so that inter-operability can be maintained as the system evolves to incorporate new capabilities and technologies.

The Minnesota Statewide ITS Architecture is a tailored version of the National ITS Architecture. Tailoring incorporates the prioritized wants and needs of the state's transportation users and stakeholders, as well as its existing ITS infrastructure. The functional architecture, physical architecture, system requirements and implementation plan are fully documented in the following project deliverables:

ITS Traveler Wants/Needs - Information obtained from Minnesota residents in ten end user sessions held across the state. Used to establish and prioritize end-user requirements.

ITS Transportation Wants/ Needs - Information obtained from ITS stakeholder institutions. Used to establish and prioritize ITS service provider requirements.

ITS Wants/Needs Analysis - Final results and recommendations of the wants and needs research.

Statewide ITS As-Is Agency Reports for Minnesota - Information about existing transportation systems that establish the starting point for the Architecture Implementation Plan.

ITS System Specification - Incorporates the results of the functional and physical architectures into specification format. The specification will clearly identify ITS system level requirements for the identified Minnesota ITS services.

ITS Component Specification - Incorporates the results of the functional to physical allocation in specification format. The specification will clearly identify the Minnesota ITS component systems requirements.

ITS Architecture Implementation Plan - A recommended ITS deployment strategy for future state initiatives.

2. SCOPE

This document, *Statewide ITS As-Is Agency Reports for Minnesota,* consists of a collection of individual system survey reports related to transportation systems. The Polaris Project will use the survey information collected to derive the existing architectural framework. After the existing architectural framework is derived, this information will be used as the baseline for developing the Minnesota Statewide ITS Architecture.

Agencies identified and contributed to this document were:

- Minnesota Department of Transportation Office of Advanced Transportation Systems
- Minnesota Department of Transportation Traffic Management Center
- Minnesota Department of Transportation Metropolitan Division
- Minnesota Department of Transportation Electrical Services Section
- St. Paul Department of Public Works
- Minneapolis Department of Public Works
- Hennepin County Department of Public Works
- Ramsey County Department of Public Works
- Minnesota State Patrol
- Hennepin County Medical Center
- Metropolitan Council Transit Operations
- Metropolitan Airports Commission
- Gopher State One Call
- Minnesota Office of Tourism

2.1 Document Overview

This document presents the methods, assumptions and procedures used to collect the baseline information. The documentation of systems that were inventoried is presented in Section 3.

2.2 Methods, Assumptions, and Procedures

2.2.1 System Identification

Agency and system candidates were based upon several factors prior to survey. Through market research, the highest wants and needs priorities for traveler and transportation related agencies identified the functional areas to be improved (i.e. Travel Conditions). The Polaris Project took the functional wants and needs and associated the wants and needs functions to current Minnesota Agencies. Another factor that contributed to identifying the candidate agencies was the presence of existing Intelligent Transportation Systems infrastructure that has been deployed to support integrating open systems for travelers, inter-agency and intra-agency needs.

One hundred twenty one pre-survey candidate systems identified by the process described previously, are listed in Appendix A. The pre-survey candidate list represents systems that were known by members of the Polaris Architecture working team, Mn/DOT Guidestar, and SRF

Consulting Group, Inc. Of the 12 1 candidate systems, 3 8 system surveys were performed and included in this document. The 3 8 systems were selected as "best representatives" of the 12 1 pre-survey candidates and provided a diverse base of information to use for developing the Minnesota Statewide ITS Architecture.

2.2.2 Data Collection Guide

The survey of systems required that a standard data collection approach be applied for the *Statewide ITS As-Is Agency Reports for Minnesota.* A data collection guide was prepared to help this effort.

The data collection guide was developed to provide interviewers with an overview of relevant information that needed to be collected during the survey for each system. The data collection effort focused on the following:

- A block diagram of the system and interfaces to external users and systems.
- All hardware elements that are interconnected to form the bounds of the system.
- All software components used by the hardware elements.
- All system interfaces that connect hardware components together and external systems to the system.
- All personnel using the system.

The Data Collection Guide is presented in Appendix B.

2.2.3 Field Data Collection

The survey collection activities were completed by two teams of interviewers. Prior to an on-site interview, an agency or system contact person was briefed as to the nature of the survey. In some cases, generally where agencies knew little of the Polaris project, a follow-up letter was sent to further outline the desired level of information.

The on-site interview was generally a free format discussion of the specific system elements. The data collection guide was only used to ensure all components where discussed. The interviewers recorded the audio portion of the interview in order to help with the documentation of the system. Where possible, the actual system components were also recorded on videotape, again, to help with the system documentation. In some cases, written documentation from the agency was reviewed to help describe the system.

A report of the surveyed system followed a standard format and consisted of two basic parts: 1) a system block diagram and 2) a data collection template. The block diagram is intended to depict the system components and interfaces while the template thoroughly describes the system configuration. The template is organized to step through the system related personnel, hardware, software and interfaces. All systems documented for the project used this standardized approach. The system documentation was separated by agencies into eight volumes.

The system reports contained in this volume follow in Section 3.

3. As-Is Baseline System Documentation

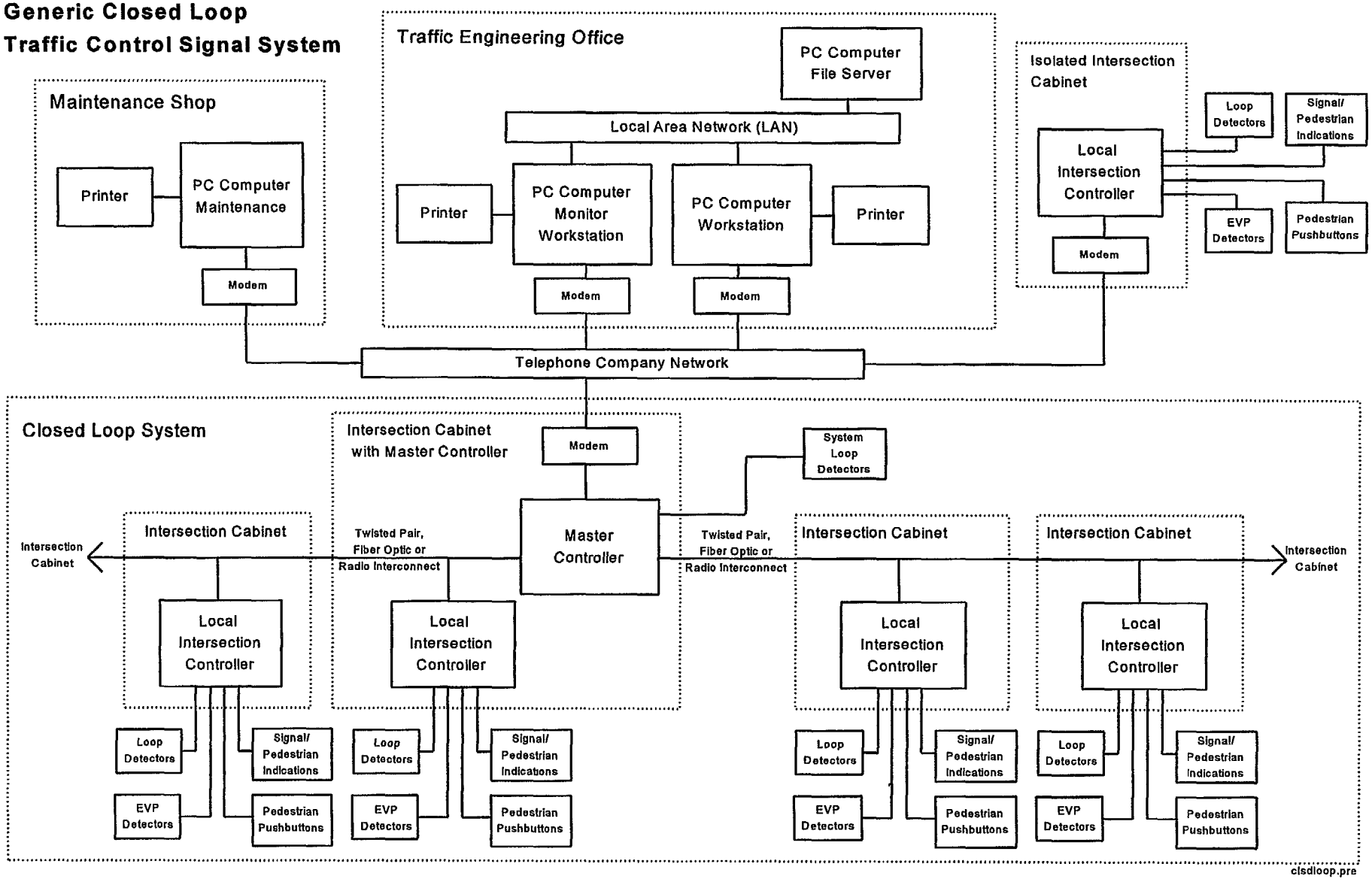
3.1 MN/DOT METROPOLITAN DIVISION

3.1.1 Generic Closed Loop Control Signal System
3.1.2 Mn/DOT Advanced Portable Traffic Management System
3.1.3 Mn/DOT Portable Traffic Management System
3.1.4 Mn/DOT Metro Division Lane Closure Information System
3.1.5 Mn/DOT Metro Division Construction Information System

3.1.1 GENERIC CLOSED LOOP TRAFFIC CONTROL SIGNAL SYSTEM

POLARIS As-Is Baseline Data Collection

Generic Closed Loop Traffic Control Signal System



cisdloop.pre
30 July 1998

1.0 AGENCY "STATE, COUNTY, CITY-TRAFFIC ENGINEERING OFFICE"

- Agency Type	Department of Public Works - Traffic Division
- Agency Functions	Operate and maintain traffic control signal systems.

2.0 SYSTEM "GENERIC CLOSED LOOP TRAFFIC CONTROL SIGNAL SYSTEM'

- Date of As-Is Data Collection	2-23-96
- Purpose	Provide central management of isolated and arterial traffic control signal systems.
- Hours of Operation	24 hours per day
- Geographic Coverage	Intersections within governmental boundaries.
- Contacts	Ray Starr Minnesota Department of Transportation Mail Stop 320 117 University Ave Room 252 St. Paul, MN 55155 Ph (612) 296-7596 Fax (612) 215-0409
- Status	Existing
- Policies	Agencies may have policies concerning coordination of streets controlled by another agency crossing a coordinated arterial.
- Constraints	1) Coordination of arterial intersections at greater than 1/2 mile spacing does not benefit traffic operation along the arterial. 2) The cost of interconnect systems, if not done during roadway construction, can be expensive if located in an urban area with sidewalks. 3) The high cost of master controllers, dial-up modems and phone line connection.
- Block Diagram	See attached
- Other	New National Electrical Manufacturers Association (NEMA) standard TS 2 for traffic signal controllers. There is no compatibility of closed loop signal software and hardware components between different manufacturers. For example, an Eagle intersection controller can not be connected to an Econolite master controller.

- Typical Operational Scenario

1) Maintenance computer monitors intersections for Maintenance related problems. Master controllers can be programmed to call maintenance facility.
2) Monitor workstation computer monitors events. It can be programmed to retrieve data including event reports and loop detector data from the master controller and local intersection controllers.
3) Workstations are used for upload, download and to manage databases as well as printing reports.
Workstation machines are also used for graphical display of intersections and arterial zones. Graphical displays include real-time information of major movement greens and reds, intersection status, actuation status of system detectors, preemption events and coordination errors.
4) System software maintains a database of master controller and local intersection controller data.

THIS IS AN ESTIMATE OF THE TYPE OF PERSONNEL AN AGENCY MIGHT HAVE TO OPERATE/MAINTAIN CLOSED LOOP AND ISOLATED TRAFFIC CONTROL SIGNAL SYSTEMS.

2.1 PERSONNEL "SYSTEM TRAFFIC ENGINEER"

- Personnel Function

Oversee traffic control signal systems within the agency. May have other responsibilities relating to traffic and transportation within the agency(signing, lighting, or non-signalized intersection activities).

2.2 PERSONNEL "SIGNAL TIMING ENGlNEER/TECHNICIAN"

- Personnel Function

Responsible for timing, re-timing and monitoring traffic control signal systems. Most likely uses computer based intersection and arterial signal timing software to develop timing plans for input into traffic control signal controllers and master controllers.

2.3 PERSONNEL "TECHNICIAN"

- Personnel Function

Technician is responsible for maintaining the traffic control signal system database, detector log files and monitoring systems. They may conduct speed and turning movement studies and other related studies for use in signal timing and planning projects. They may also prepare signal justification reports.
This may be the same personnel as described in section 2.1 or 2.2 above.

2.4 PERSONNEL MAINTENANCE TECHNICIAN"

- Personnel Function	Respond to maintenance calls on traffic control signal systems. Typical problems include : 1) loop detectors not working 2) interconnect error 3) re-lamping indications 4) knock downs 5) hardware failures (controller, load switches, loop detector amplifiers, pedestrian push button isolators, EVP hardware or conflict monitors)

3.1 HARDWARE "MASTER CONTROLLER"

- Hardware Type	Master controllers
- Functions	Control and coordinate up to 24 intersection controllers, 32 system detectors and 8 speed traps (numbers vary by the manufacturer of the controller).
- Location	In field normally
- Data Name/Contents	Signal timing parameters, loop detector logs and event logs
- Data Type	Data
- Status	Existing
- Other	1) Major manufacturers of master controllers are: a) Econolite b) Eagle c) Traffic Control Technologies, Inc. Most controllers contains an internal (1200bps FSK) modem for communication with the master controller. 2) Master controllers can be located in the engineering office and interconnected to the intersection controllers.

3.1.1 SOFTWARE 'MASTER CONTROLLER"

- Software Type	Traffic control software
- Software Standards	Proprietary
- Functions	Contains all timing and control logic. Econolite controllers have a MC 68302 microprocessor, battery-backed CMOS RAM, EPROM or flash EEPROM, as an example. User data is stored in plug-in EEPROM data module.
- Status	Existing

3.2 HARDWARE "LOCAL INTERSECTION CONTROLLER"

- Hardware Type	Traffic signal controller that meets or exceeds NEMA TS l-l989 or NEMA TS2- 1992 specifications. Some older controllers may not meet above referenced standard.
- Functions	Operates traffic control signal system
- Location	In field
- Data Name/Contents	Signal timing parameters, loop detector logs and event logs
- Data Type	Data
- Status	Existing
- Other	Major manufactures of controllers are: a) Econolite b) Eagle c) Traffic Control Technologies, Inc. All controller types basically operate in the same manner because of NEMA specifications. The difference between the controllers lies in what they will do beyond the NEMA specifications such as communications between the controller and the master controller, preemption capabilities, number of loop detectors and timing plans. Local intersection controllers contains an internal (1200bps FSK) modem for communication with the master controller. Controller operates on a 24 volt logic signal to operate peripheral equipment.

3.2.1 HARDWARE/SOFTWARE "ECONOLITE CONTROLLER"

- Software Type	Traffic control software
- Software Standards	Proprietary
- Functions	Contains all timing and control logic. Econolite controllers have a 32-bit microprocessor, battery-backed CMOS RAM, EPROM or flash EEPROM, for example. User data is stored in plug-in EEPROM data module.
- Status	Existing

3.3 HARDWARE "INTERSECTION CABINET and EQUIPMENT"

- Hardware Type	Traffic signal cabinet likely to contain: 1) Malfunction Management Unit (MMU) or Conflict Monitor Unit which will cause intersection to flash if it detects that two conflicting signal indications are on. 2) Detector rack and detector amplifier cards which takes the change in inductance from field loop detectors and send a signal to the controller. 3) Load switches - (3) solid state relays for each phase. 4) Pedestrian isolator which receives a signal from the pedestrian push-button and relays the pedestrian call to the controller.
- Functions	Environmental enclosure for traffic control signal system hardware
- Location	In field (intersection corner)
- Status	Existing

3.4 HARDWARE "LOOP DETECTOR WIRE"

- Hardware Type	Loop detector
- Functions	Measure change of inductance
- Location	Under pavement
- Data Name/Contents	Change of induction
- Data Type	Data
- Status	Existing
- Policies	Some agencies specify that loop coils be placed in conduit in the sub-grade as part of new construction.
- Other	1) Typically #12 or #14 wire is placed in a saw cut of pavement with 3-4 turns of wire in the loop (depending on pavement depth and type). 2) Most common method of vehicle detection is loop detectors. Other methods are also used including microwave and video detection systems such as Autoscope.

3.5 HARDWARE "LOOP DETECTOR CARD/AMPLIFIER"

- Hardware Type	Loop detector
- Functions	Detects presence of a vehicle and sends a signal to the traffic signal controller.
- Location	In field
- Data Name/Contents	Change of induction
- Data Type	Data
- Status	Existing
- Other	Some cards/amplifiers have the ability to delay calls for a programmable period of time (3 seconds to 30 seconds).

3.6 HARDWARE "EMERGENCY VEHICLE PREEMPTION (EVP) DETECTORS"

- Hardware Type	Detector
- Functions	Detects strobe light signal a from the emitter on an emergency vehicle or bus and sends a signal to the traffic signal controller to begin preemption timing.
- Location	Typically on mast arm pole
- Data Name/Contents	Signal
- Data Type	Data
- status	Existing
- Other	1) In Twin Cities metro area, an EVP indicator light (standard flood light) is mounted on top of the detector to indicate to the driver of the emergency vehicle that the signal controller and system has gone into preemption. 2) Some signal systems also have railroad preemption to clear queued traffic from the railroad tracks as a train approaches. The railroad company will provide a signal to the traffic signal controller a predetermined time before the train crosses the intersection. 3) In some areas, buses with low priority emitters are being used to obtain better transit performance. Two manufacturers of Emergency Vehicle Preemption equipment are: TOMAR Electronics Inc. 2100 West Obispo Gilbert, Arizona 85233 3M Safety and Security Systems Division Traffic Control Systems 3M Center, Bldg. 225-4N-14 St. Paul, Minnesota 55144-1000

3.7 HARDWARE "PEDESTRIAN PUSH BUTTONS"

- Hardware Type	Push button
- Functions	Send signal to pedestrian isolator card and then the card sends a call to the intersection controller. The controller displays a walk indication when the phase is serviced.
- Location	On signal pole or pedestrian push button station.
- Data Name/Contents	Pedestrian call to intersection controller.
- Data Type	Data
- Status	Existing

3.8 HARDWARE "TRAFFIC SIGNAL AND PEDESTRIAN INDICATIONS"

- Hardware Type	Red, yellow, green, walk, flashing don't walk or don't walk indication.
- Functions	Control vehicular and pedestrian flow
- Location	In field, on mast arms, mast arm poles and/or pedestals.
- Data Name/Contents	on/off
- Data Type	Data
- Status	Existing

3.9 HARDWARE "CONTROLLER CABINET MODEM'

- Hardware Type	Modem - 2400bps
- Functions	Communicate from master controller to maintenance shop and engineering office.
- Location	Intersection controller cabinet with master controller.
- Data Name/Contents	System information
- Data Type	Data
- Status	Existing
- Other	1) Master controller has its own communication software. 2) This modem should be able to withstand the environmental conditions of the intersection cabinet.

3.10 HARDWARE "MAINTENANCE/TRAFFIC ENGINEERING OFFICE MODEM'

- Hardware Type	Modem - 2400 bps
- Functions	Communicate from master controller to maintenance shop and engineering office.
- Location	Maintenance shop and traffic engineering office.
- Data Name/Contents	System information
- Data Type	Data
- status	Existing
- Other	Zone Monitor program has its own communication software. Quantity varies depending on the number of machines that are running Zone Monitor.

3.11 HARDWARE "COMPUTER - MAINTENANCE"

- Hardware Type	Computer
- Functions	Runs Zone Monitor software
- Location	Maintenance shop
- Data Name/Contents	System operation/status data
- Data Type	Data
- Status	Existing

3.12 HARDWARE "COMPUTER - MONITOR WORKSTATION"

- Hardware Type	Computer
- Functions	Runs Zone Monitor software.
- Location	Traffic engineering office
- Data Name/Contents	1) Wait for master controllers to call in with event reports and detector logs. 2) Make preprogrammed calls to receive event reports and detector logs. 3) Make preprogrammed calls for automatic system status reports, comparison of controller and database files or to download controller database files. 4) Update event and detector log files on disk.
- Data Type	Data
- Status	Existing

3.13 HARDWARE "COMPUTER - WORKSTATION"

- Hardware Type	Computer
- Functions	Runs Zone Monitor software.
- Location	Traffic engineering office
- Data Name/Contents	1) Graphically display different intersection and arterial systems. 2) Upload, download and manage controller data bases. 3) Generate system status reports.
- Data Type	Data
- Status	Existing

3.13.1 SOFTWARE "CLOSED LOOP SYSTEM"

- Software Type	Transportation software application
- Functions	Provides database management and surveillance for traffic control systems with a capacity of up to 5,760 intersections (number varies by manufacturer). Communicates to master controllers through telephone lines and modems. A) Displays real-time intersection information including: 1)Vehicle phase and overlap greens, yellows and reds. 2) Pedestrian walk, pedestrian clearance and don't walk. 3) Vehicle and pedestrian detector calls. 4) Master controller number and mode of operation (free, time of day or traffic responsive). 5) Cycle, offset and split in effect. 6) Cycle length and cycle countdown. 7) System special function status. 8) On-line, sync, preempt and alarm status. 9) Intersection offset 10) Coordination alarms and failures 11) Communication failures. B) Displays real-time arterial systems information including: 1) Display up to 24 intersections and 32 system detectors (number varies by manufacturer). 2) Once per second communication during display. 3) Real-time information on each intersection including phase greens and reds for up to 12 phases, detector actuation's, controller status and communication status.
- status	Existing
- Policies	Agencies may have policies regarding use of the system by engineering personnel. For example, the agency traffic engineer may approve all signal timing plans before they can be downloaded to the master controller and intersection controllers.
- Issues	System software is proprietary and the user needs a license agreement.

3.13.2 SOFTWARE "LOCAL AREA NETWORK"

- Software Type	Network
- Functions	Network interface
- Status	Existing
- Other	A network is not needed, system can run on single computer.

3.14 HARDWARE "PRINTER"

- Hardware Type	Printer
- Functions	Prints data
- Location	Signal shop
- Data Name/Contents	Intersection controller and traffic count data
- Data Type	Data
- Status	Existing

3.15 HARDWARE "LOG PRINTER"

- Hardware Type	Printer
- Functions	Prints data
- Location	Signal shop
- Data Name/Contents	System event and error data including communication errors, controller failures, emergency vehicle preemption events and coordination errors.
- Data Type	Data
- Status	Existing

4.1 INTERFACE	Interconnect
- Connects to . . .	Master controller/local intersection controller
- Interface location	In field
- Interface Type	Data
- Interface Direction	Both
- Interface Component	Daisy chained on any one of these types of interconnect: 1) Twisted pair wire (2 pair #19) 2) Spread spectrum radio 3) Fiber optic
- Protocol/Standard	Proprietary
- Information Type/Content	Signal system information
- Information Direction	Both
- Information Frequency	l/second
- Other	Telemetry utilizes time-division-multiplex, frequency-shift-keying techniques for serial data communications. Each controller is assigned an address that is different from all others.

4.2 INTERFACE	Local intersection controller
- Connects to . . .	Loop detector card/amplifier
- Interface location	Intersection
- Interface Type	Data
- Interface Direction	Input
- Interface Component	Wire lead
- Information Type/Content	Vehicle detected
- Information Direction	Input
- Information Frequency	On occurrence

4.3 INTERFACE	Local intersection controller
- Connects to . . .	Emergency vehicle preemption detector card
- Interface location	Intersection
- Interface Type	Data
- Interface Direction	Input
- Interface Component	Wire lead
- Information Type/Content	Emergency vehicle with active emitter detected
- Information Direction	Input
- Information Frequency	On occurrence

4.4 INTERFACE	Local intersection controller
- Connects to . . .	Signal and pedestrian indication load switch
- Interface location	Intersection
- Interface Type	Data
- Interface Direction	output
- Interface Component	Wire lead
- Information Type/Content	Signal and pedestrian indication
- Information Direction	output
- Information Frequency	As needed

4.5 INTERFACE	Local intersection controller
- Connects to . . .	Pedestrian push-button isolator
- Interface location	Intersection
- Interface Type	Data
- Interface Direction	Input
- Interface Component	Wire lead
- Information Type/Content	Pedestrian call
- Information Direction	Input
- Information Frequency	As needed

4.6 INTERFACE	Master controller
- Connects to . . .	System loop detector card/amplifier
- Interface location	Master controller cabinet
- Interface Type	Data
- Interface Direction	Input
- Interface Component	Wire lead
- Information Type/Content	Vehicle detected
- Information Direction	Input
- Information Frequency	On occurrence
4.7 INTERFACE	Master controller
- Connects to . . .	Cabinet Modem
- Interface location	Master controller cabinet
- Interface Type	Data
- Interface Direction	Both
- Interface Component	RS 232
- Protocol/Standard	Proprietary
- Information Type/Content	Intersection and master controller information.
- Information Direction	Both
- Information Frequency	1 per second
- Information Standards	Proprietary
4.8 INTERFACE	Maintenance shop / engineering office modem
- Connects to . . .	Cabinet modem
- Interface location	Maintenance shop/engineering office and master controller cabinet
- Interface Type	Data
- Interface Direction	Both
- Interface Component	Service provider
- Information Type/Content	Intersection and master controller information.
- Information Direction	Both
- Information Frequency	1 per second
- Information Standards	Proprietary

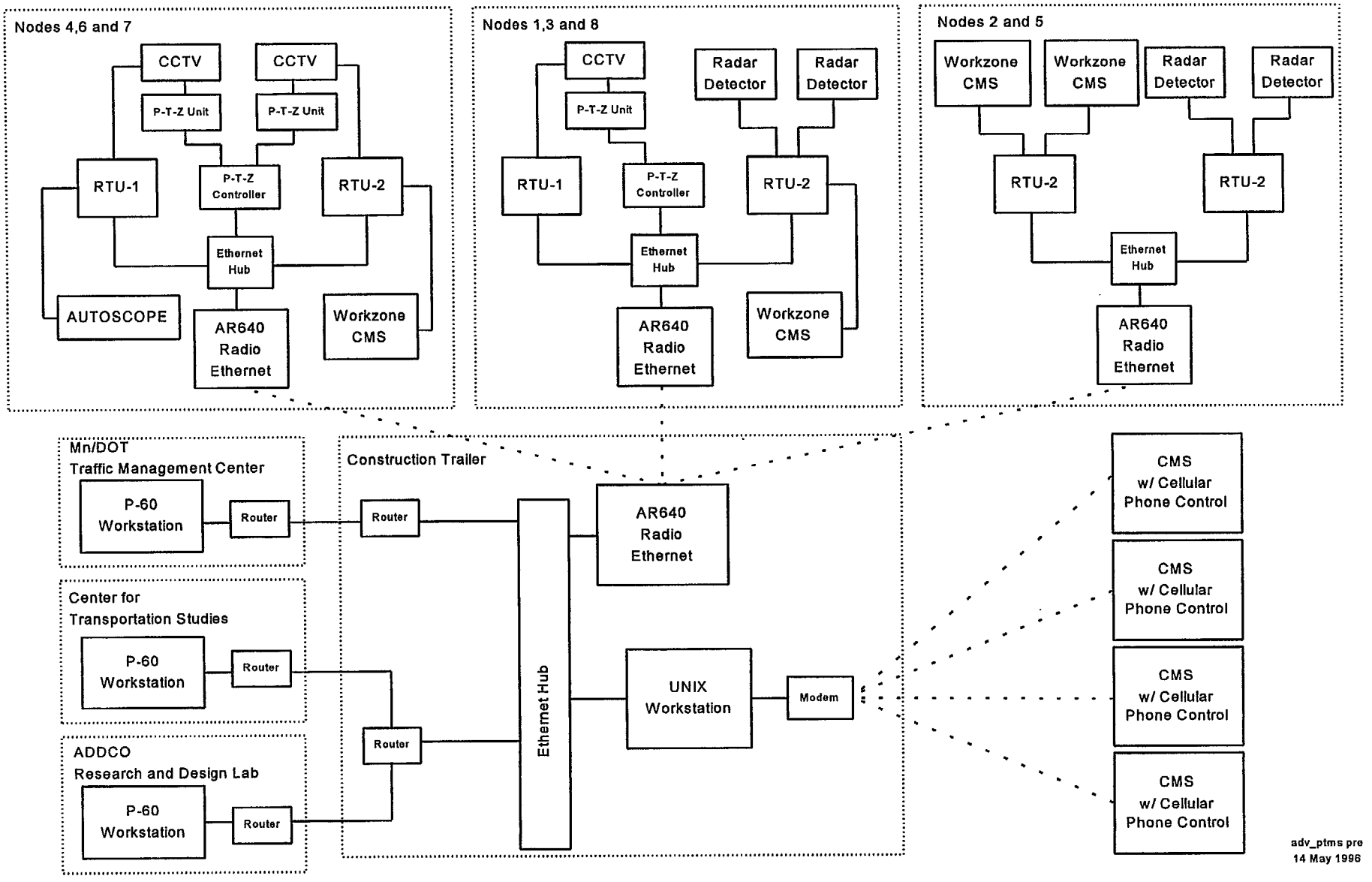
4.9 INTERFACE	PC Computer Maintenance shop/engineering office
- Connects to . . .	Maintenance shop/engineering office modem
- Interface location	Maintenance shop/engineering office
- Interface Type	Data
- Interface Direction	Both
- Interface Component	RS 232
- Information Type/Content	Intersection and master controller information.
- Information Direction	Both
- Information Frequency	1 per second
- Information Standards	Proprietary

4.10 INTERFACE	PC Computer Maintenance shop/engineering office
- Connects to . . .	Printer
- Interface location	Maintenance shop/engineering office
- Interface Type	Data
- Interface Direction	output
- Interface Component	Centronics or RS-232
- Protocol/Standard	N/A
- Information Type/Content	Intersection and master controller data bases, detector counts, event and log information, system status reports.
- Information Direction	output
- Information Frequency	On occurrence or as requested

3.1.2 MN/DOT ADVANCED PORTABLE TRAFFIC MANAGEMENT SYSTEM

POLARIS As-Is Baseline Data Collection

Mn/DOT Advanced Portable Traffic Management System



adv_ptms pre
14 May 1996

AS-IS DATA COLLECTION TEMPLATE

1.0 AGENCY "MINNESOTA DEPARTMENT OF TRANSPORTATION"

- Agency Type	Department of Transportation
- Contacts	Marthand Nookala, P.E. Project Manager Minnesota Department of Transportation 3485 Hadley Avenue North Oakdale, MN 55128 voice (6 12) 779-5 194 fax (612) 779-5170

2.0 SYSTEM "ADVANCED PORTABLE TRAFFIC MANAGEMENT SYSTEM"

- Date of As-Is Data Collection	4/96- Data collected from the ITS America paper and other system design documents.
- Purpose	The overall purpose of the operational test is to integrate innovative new technologies into an advanced portable work zone traffic management system.
- Hours of Operation	An operator will monitor the system from 6:00 to 9:30 A.M. and from 3:00 to 6:30 P.M. on weekdays.
- Geographic Coverage	The work zone where the system will be tested is on I-94 between approximately 24th Avenue South and Trunk Highway 280 just east of the Minneapolis central business district. The system will also include the placement of changeable message signs along freeways prior to the work zone to alert/advise motorists of current traffic conditions through the work zone.

- Contacts	Project Manager Marthand Nookala - Mn/DOT Alliant Engineering, Inc. John W. Dillingham, P.E. Director of Engineering 1117 East Franklin Avenue Minneapolis, MN 55404 voice (612) 871-5521 fax (612) 871-1746 Minnesota Department of Transportation Allan Pint, P.E. Assistant Division Engineer 1500 West County Road B2 Roseville, MN 55 113 voice (612) 582-1343 fax (612) 582-1302 Minnesota Department of Transportation Anthony J. Winiecki, P.E. Signal Operations Engineer 2055 North Lilac Drive Golden Valley, MN 55422 voice (612) 797-3134 fax (612) 797-3152
- Status	System component implementation and baseline data collection is underway, operational testing and data collection to begin in May and continue through September. The final report will be completed in December of 1996.
- Block Diagram	See attached

- Typical Operational Scenario

The operational test is expected to begin in May 1996 and continue through September 1996. Data will be transmitted to the Mn/DOT Traffic Management Center (TMC) including video images, volume, speed and incident detection. The video images will refresh at the rate of approximately once per second. Nine video cameras will be operational during the operational test, up to six of these cameras may be occupied by machine vision applications. The pan/tilt units have been constructed to exacting specifications which will enable them to return to within one half degree of their former settings. This allows the camera views to be adjusted at any time to view an incident or a certain portion of the roadway. When the system operator is satisfied that an incident has cleared, the operator can readjust the camera and continue to utilize the machine vision capabilities. The system operator will monitor the video images, volume and speed data for both directions of traffic. When the speeds drops below a certain predetermined threshold, the operator is notified by a signal from the computer. The operator can then make changes to both types of the changeable message signs via either the computer software(work zone changeable message signs) and cellular telephone(located outside the work zone). The full size trailer-mounted changeable message signs are placed to give motorists advanced warning of delays in or near the construction area.

These signs are also utilized to give the traveling public time to make alternative route decisions. The work zone changeable message signs are located in the construction zone and are utilized to give the motorist advanced warning regarding incidents, lane changes, advisory speed or construction operations information. The system operator will monitor traffic operations through the construction zone at the TMC from 6:00 to 9:30 A.M. and from 3:00 to 6:30 P.M. The system components maintenance is the responsibility of ADDCO, Inc and Warning Lites of Minnesota.

2.1 PERSONNEL "SYSTEM OPERATOR"

- Personnel Function	(1) The operator will monitor system cameras, volumes and speed from workzone. (2) The operator can make changes to the messages that are displayed on both the workzone changeable message sign and the standard changeable message signs.
- Quantity	1
- Location	Mn/DOT Traffic Management Center 110 14th Avenue South Minneapolis, MN 55404
- Working hours	6:00 to 9:30 A.M. and 3:00 to 6:30 P.M.
- Status	Existing

3.1 HARDWARE "WORKSTATION - UNIX"

- Hardware Type	Computer
- Functions	1) Control network system 2) Modem link to connection to trailer mounted CMS 3) File server
- Location	Construction Trailer
- Data Type	Data
- Status	Existing
- Other	P-60 computer running UNIX

3.2 HARDWARE "P-60 WORKSTATION - WINDOWS95"

- Hardware Type	Computer (quantity 3)
- Functions	View video images and traffic data, operate camera pan/tilt and zoom functions, communicate with workzone CMS and access trailer mounted CMS.
- Location	1) Traffic Management Center 2) Center for Transportation Studies (CTS) 3) ADDCO Manufacturing Co., Inc.
- Data Type	Data
- Status	Existing
- Other	P-60 computer running Windows95 The system operator will be located at the traffic management center. The other workstation locations will be used to monitor the system.

3.3 HARDWARE "ROUTER"

- Hardware Type	Route (quantity 5)
- Functions	These devices connect the ethernet to ISDN phone lines
- Location	Construction trailer (2) TMC (1) ADDCO (1) CTS (1)
- Data Type	Data
- Status	Existing
- Other	ASCENDP 25

3.4 HARDWARE "ETHERNET HUB"

- Hardware Type	Ethernet hub (quantity 9)
- Functions	Allow multiple devices to share ethernet.
- Location	1) Portable nodes (one per node) 2) Construction trailer
- Data Type	Data
- Status	Existing

3.5 HARDWARE "AI2640 RADIO ETHERNET"

- Hardware Type	Radio Tx/Rx (quantity 9)
- Functions	Communication remote nodes and UNIX workstation/server.
- Location	1) Portable nodes (one per node) 2) Construction trailer
- Data Name/Contents	Operates on 4 channels, power output of 500 mW and data rate of 96,000 bps.
- Status	Existing
- Constraints	Line of sight radio transmissions are required between pairs of radios.
- Other	AR640

3.6 HARDWARE "MODEM"

- Hardware Type	Modem
- Functions	Allows communication to trailer mounted changeable message signs.
- Location	Construction trailer
- Data Name/Contents	Commands to changeable message sign.
- Data Type	Data
- Status	Existing
- Other	Microcomm analog modem

3.7 HARDWARE "CHANGEABLE MESSAGE SIGN (CMS)"

- Hardware Type	Trailer mounted portable changeable message sign consisting of : CMS board, 120 VAC generator/solar, trailer and cellular phone.
- Functions	Display traffic related messages.
- Location	In field
- Data Name/Contents	3-8 character lines of messages, each character consist of 18 inch high, 5x7 LED disk matrix.
- Data Type	Messages
- Status	Existing
- Other	ALS-1000 - Unit contains custom microprocessor controller with 64K of ROM and 32K of CMOS RAM and can store up to 25,6-frame message sequences. Messages are stored in CMS but can be changed or updated using computer with custom ADDCO software and cellular telephone link.

3.8 HARDWARE "WORKZONE CHANGEABLE MESSAGE SIGN (WZCMS)"

- Hardware Type	Changeable message sign (quantity 10)
- Functions	Display traffic related messages.
- Location	Remote node locations
- Data Name/Contents	48 pixel wide by 24 pixel high full matrix sign. The signs are capable of displaying up to 3 lines of 5x7 character messages of 7 characters each. The characters are 9.5 inches high. Full graphics are also supported.
- Data Type	Messages
- status	Existing

3.9 HARDWARE "CLOSED CIRCUIT TV CAMERA (CCTV)"

- Hardware Type	Camera (quantity 9)
- Functions	Provide real-time monitoring and detection of traffic conditions.
- Location	Remote node locations
- Data Name/Contents	Video, incident and volume detection.
- Data Type	Video
- Status	Existing
- Other	COHU camera unit with environmental enclosure and 4: 1 zoom.

3.10 HARDWARE "PAN / TILT/ZOOM CONTROL UNIT"

- Hardware Type	Electra-mechanical pan/tilt/zoom unit (quantity 9)
- Functions	Allows control of camera movement and zoom
- Location	Remote node locations
- Data Type	Data
- Status	Existing

3.11 HARDWARE "PAN / TILT / ZOOM CONTROLLER"

- Hardware Type	Controller (quantity 6)
- Functions	Allows control of camera movement and zoom.
- Location	Remote node locations
- Data Type	Data
- Status	Existing
- Other	ADDCO custom pan/tilt control module Dedicated controller which can handle up to 5 camera pan-tilt units and has a serial interface for command and control.

3.12 HARDWARE "AUTOSCOPE MACHINE VISION"

- Hardware Type	Video detection system (quantity 3)
- Functions	Vehicle detection
- Location	Remote node locations
- Data Type	Data
- Status	Existing
- Other	Similar to the AUTOSCOPE Model 2004 system.

3.13 HARDWARE "RADAR DETECTOR UNIT"

- Hardware Type	Radar detection system (quantity 10)
- Functions	Vehicle speed detection
- Location	Remote node locations
- Data Type	Data
- Status	Existing
- Other	Single field of vision speed detection unit.

3.14 HARDWARE "REMOTE TERMINAL UNIT - TYPE 1 (RTU-1)"

- Hardware Type	Computer (quantity 6)
- Functions	Relays digital video images
- Location	Remote node locations
- Data Name/Contents	Video images
- Data Type	Video
- Status	Existing
- Other	DOS based computer with video digitizer, 2 serial ports and ethernet-TCP/IP interface (1 OBT).

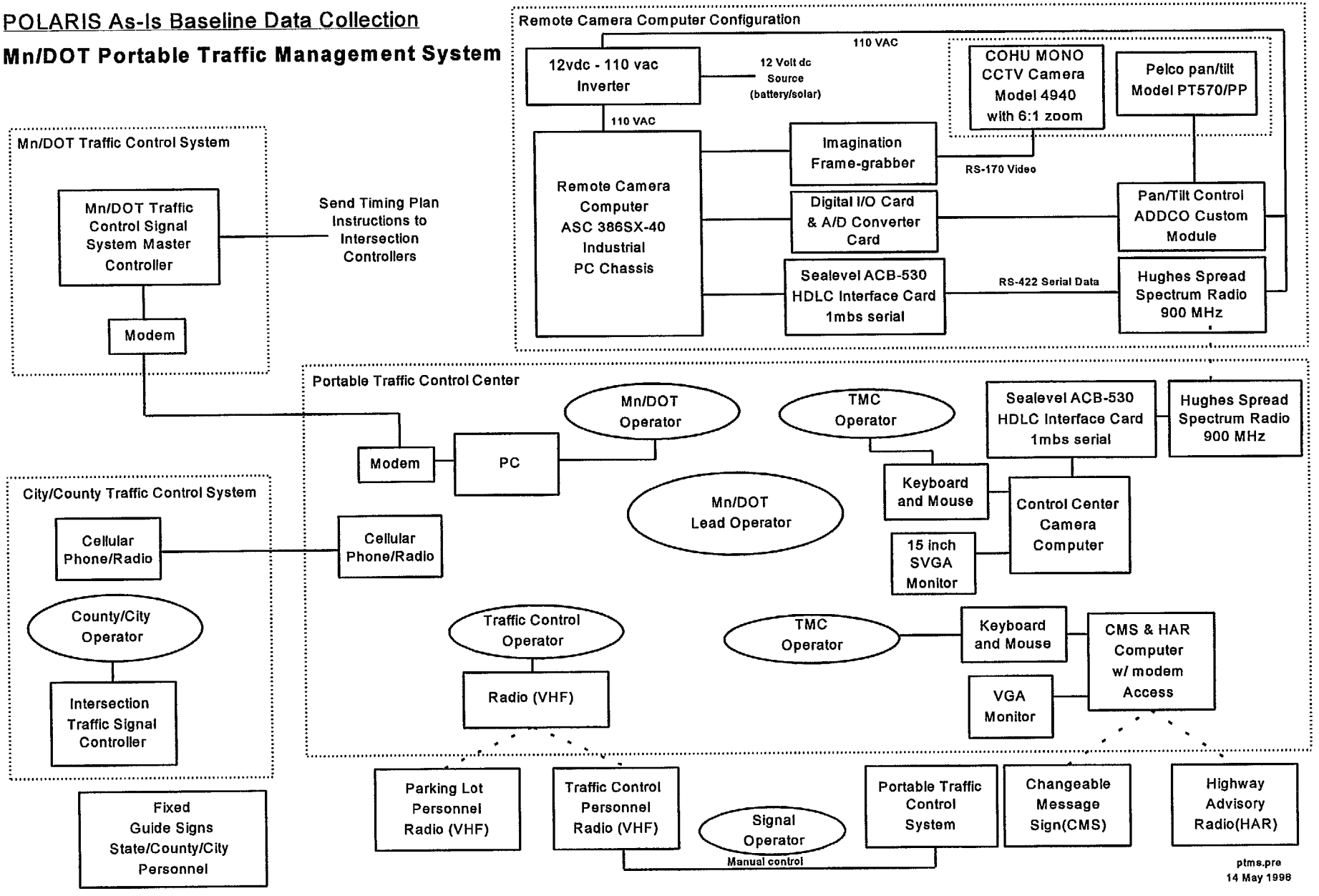
3.15 HARDWARE "REMOTE TERMINAL UNIT - TYPE 2 (RTU-2)"

- Hardware Type	Computer (quantity 12)
- Functions	Relays video images
- Location	Remote node locations
- Data Name/Contents	CMS control, vehicle detection device outputs
- Data Type	Data
- Status	Existing
- Other	DOS based computer with 2 serial ports and ethenet-TCP/TP interface (1 OBT).

3.1.3 MN/DOT PORTABLE TRAFFIC MANAGEMENT SYSTEM

POLARIS As-Is Baseline Data Collection

Mn/DOT Portable Traffic Management System



AS-IS DATA COLLECTION TEMPLATE

1.0 AGENCY "ADDCO MANUFACTURING"

- Agency Type	ADDCO Manufacturing Co. is a Sales/Service Traffic Control Products company. This project is a cooperative partnership between FHWA, the National Sports Center, Mn/DOT, Law Enforcement agencies, the cities of Blaine, Coon Rapids, and Roseville, Anoka and Ramsey County, ADDCO, Warning Lites of Minnesota, the Burnet Senior Classic, the Minnesota State Fair and Rosedale Shopping Center
- Contacts	Gordon Melby ADDCO Manufacturing Co., Inc. 69 Empire Drive St. Paul, MN 55103-1856 voice (612) 224-8800 fax (612) 224-1411
- Other	ADDCO owns most of the system components.

2.0 SYSTEM "MN/DOT PORTABLE TRAFFIC MANAGEMENT SYSTEM"

- Date of As-Is Data Collection	2/2 l/96- Data collected from Final System design document (June 1995). This document contains information on system components and operation that is specific to PTMS and its use at the National Sports Center (NSC). The system was tested at other events in the Twin Cities region including the U.S. Senior Open, the Minnesota State Fair and at the Rosedale regional shopping center.
- Purpose	To test the feasibility of applying portable Intelligent Vehicle Highways Systems (IVHS) technologies for management of major event traffic.
- Hours of Operation	System is operated as needed to manage traffic during special events.
- Geographic Coverage	Area surrounding NSC in the City of Blaine in Anoka County bounded by I-35 W to west, 109th Street to north, TH. 65 to east, and I-694 to south.

- Contacts	Operational Test Manager Marthand Nookala - Mn/DOT Operations Center Manager Larry McKenzie and Kerry Edmund (Backup) - Mn/DOT Equipment Operation Patty Bednarz and Dave Tronstad - TMC Signal Supervisor Bob Bettsand Amr Jabr - Mn/DOT Signal/Signing Jane Pemble-Anoka County and Charles Lenthe-City of Blaine Equipment Management/Support Gordon Melby-ADDCO and John Story-Warning Lights Traffic Control Officers Tom Fraser - State Patrol National Sports Center Kris Bjerkness and Chris Parsons Parking Systems Inc. Doug Hoskins and Mark Hendricks
- Status	System is currently available for rent/lease from ADDCO. Similar system components are being developed/used for the Mn/DOT SMART Work Zone operational test.
- Block Diagram	See attached

- Typical Operational Scenario

1) PTMS equipment is deployed on roadways leading into the event site usually a day or two prior the commencement of the event.
2) TMC operator monitors roadway system via CCTV camera for congestion/incidents.
3) A message is broadcast on Highway Advisory Radio (HAR) which broadcasts a message containing general event information to vehicles on roadways near the event.
4) The Changeable Message Signs (CMS) display initial messages indicating which route the motorists should follow to get to the event.
5) The cameras are located at points of potential congestion to aid the PTMS personnel in determining what changes should be made to the CMS, HAR and the timing plans when congestion is detected on roadways near the event site.
6) For example, this set of instructions was implemented by the operations center personnel when traffic congestion was detected on the northbound arterial into the National Sports Center
- Adjust signal timing along TH. 65 to allow additional northbound green time.
- Contact field traffic control personnel to instruct them to give additional preference to northbound TH. 65 traffic.
- Contact parking lot personnel to increase the rate at which vehicles are accepted into the lots.
- Coordinate activities with traffic control personnel at other intersections along TH. 65.
- Broadcast HAR bulletin regarding TH. 65 traffic conditions and encourage vehicles to use I-35W.
- Update changeable message sign C on I-35W to read "Exit at 95th Avenue 2 miles."
7) Operational descriptions were developed for each camera location when congestion is observed. Each description has predetermined messages for CMS, HAR and instructions to traffic control and parking personnel.
8) The system is monitored until traffic levels returned to normal during the event.
9) During the event, system component(s) may be repositioned to appropriate locations for outbound event traffic.
10) The same procedures are used for outbound event traffic.

2.1 PERSONNEL "MN/DOT LEAD OPERATOR"

- Personnel Function: Overall responsibility for management and supervision of operations center. Makes decision on when operational plans are to be invoked.
- Quantity: 1

2.2 PERSONNEL "TMC OPERATOR"

- Personnel Function: Monitor CCTV and modify/change messages on Changeable Message Signs.
- Quantity: 1

2.3 PERSONNEL "MN/DOT OPERATOR"

- Personnel Function: Monitor CCTV and adjust signal timings on TH. 65
- Quantity: 1

2.4 PERSONNEL "CITY / COUNTY OPERATOR"

- Personnel Function: Adjust signal timing at county road intersection as directed by control center personnel.
- Quantity: 1

2.5 PERSONNEL "TRAFFIC CONTROL OPERATOR"

- Personnel Function: Relay instructions of operational plans to field traffic control officers from operations center manager. Responsible for all interaction with field traffic control personnel and any information/observations from field personnel that need to be relayed to Operations Center Manager.
- Quantity: 1

2.6 PERSONNEL "TRAFFIC CONTROL PERSONNEL"

- Personnel Function: Direct traffic at key intersections.
- Quantity: 8-11 people depending on size of event and off site-parking needs.

2.7 PERSONNEL "PARKING CONTROL PERSONNEL"

- Personnel Function: Take parking fees if required and assist with directing inflow and outflow of parking vehicles.

2.8 PERSONNEL "MAINTENANCE PERSONNEL"

- Personnel Function: Put equipment in place before event, move equipment from inbound to outbound locations and remove equipment at end of event.

3.1 HARDWARE "CCTV CAMERA"

- Hardware Type	Camera
- Functions	Provide real-time monitoring of traffic conditions at key locations.
- Location	Portable camera unit
- Data Name/Contents	Video with target rate of regeneration of 1.6 seconds or faster
- Data Type	Video
- Status	Existing
- Other	COHU MONO CCTV Camera - Model 4940 with 6:l zoom in environmental closure with sunscreen and I/F filter.

3.2 HARDWARE "FRAME GRABBER"

- Hardware Type	Frame grabber
- Functions	Collect video images from the CCTV; converts video signal to PC inputs.
- Location	Portable camera unit
- Data Name/Contents	Video images
- Status	Existing
- Other	Imagination Systems Frame Grabber - Cortex- 1

3.3 HARDWARE "PAN/TILT CONTROLLER"

- Hardware Type	Pan/tilt unit
- Functions	Provides remote control of camera movement and has a pan speed of 6 degrees per second and a tilt speed of 3 degrees per second.
- Location	Portable camera unit
- Data Type	Data
- Status	Existing
- Other	Pelco pan/tilt Model PT570/PP

3.4 HARDWARE "PAN/TILT CONTROL MODULE"

- Hardware Type	Pan/tilt module
- Functions	Allow control of camera movement
- Location	Portable camera unit
- Status	Existing
- Other	ADDCO custom pan/tilt control module

3.5 HARDWARE "DIGITAL I/O AND A/D CONVERTER CARD"

- Hardware Type	I/O and A/D converter
- Functions	Interface and communicate with camera mount
- Location	Portable camera unit
- Status	Existing
- Other	Digital I/O and A/D converter card PCL 723 Digital l/O, CYPCB24 Cable, CYPB24 Relay Panel, Relays (12 ea.), CYR DAS8 8chan AD, CBL3702 Cable, CYRSTA O8PG A/D Panel

3.6 HARDWARE "REMOTE CAMERA COMPUTER"

- Hardware Type	Computer
- Functions	Relays camera control information, digital video images to spread spectrum radio unit and compresses video images.
- Location	Portable camera unit
- Status	Existing
- Other	PC Arise Systems ASC 486SLC, math co-processor, 4MB RAM, Flash disk SSD-SHD, 1.44 MB Flash memory and enclosure

3.6.1 SOFTWARE "COMMUNICATIONS SOFTWARE'

- Software Type	Communications software
- Software Standards	Proprietary
- Functions	Communication between camera computer and spread spectrum radio
- Status	Existing
- Other	ADDCO Manufacturing Co. custom developed all communication software.

3.7 HARDWARE "INTERFACE CARD"

- Hardware Type	Interface card
- Functions	Interface between camera computer and spread spectrum radio.
- Location	Portable camera unit
- Status	Existing
- Other	Sealevel ACB-533 HDLC Interface Card

3.8 HARDWARE "SPREAD SPECTRUM RADIO"

- Hardware Type	Radio Tx/Rx
- Functions	Communication between CCTV and Control center
- Location	Control center and portable camera unit
- Data Name/Contents	Operates on 4 channels, power output of 500 mW and data rate of 96,000 bps.
- Status	Existing
- Constraints	Line of sight radio transmissions are required between pairs of radios.
- Other	Hughes Spread Spectrum Radio (902-928 MHZ) No FCC license required

3.9 HARDWARE "CONTROL CENTER CAMERA COMPUTER"

- Hardware Type	Computer
- Functions	Display video images and provide camera control.
- Location	Control center
- Data Name/Contents	Video images, control pan/tilt/zoom
- status	Existing
- Other	PC 486-66mhz DX2 w/ 200MB Disk

3.9.1 SOFTWARE "GRAPHICAL USER INTERFACE (GUI)"

- Software Type	Custom Windows based graphical user interface (GUI). Up to three images were displayed during operational test.
- Functions	Displays video images and camera settings.
- status	Existing
- Other	ADDCO Manufacturing Co.

3.10 HARDWARE "CMS AND HAR COMPUTER"

- Hardware Type	Computer
- Functions	Control Changeable Message Signs messages displayed and create new messages for the changeable message signs.
- Location	Control center
- Status	Existing
- Other	PC 486-based, vga, keyboard, dot matrix printer, modem

3.8 HARDWARE "SPREAD SPECTRUM RADIO"

- Hardware Type	Radio Tx/Rx
- Functions	Communication between CCTV and Control center
- Location	Control center and portable camera unit
- Data Name/Contents	Operates on 4 channels, power output of 500 mW and data rate of 96,000 bps.
- Status	Existing
- Constraints	Line of sight radio transmissions are required between pairs of radios.
- Other	Hughes Spread Spectrum Radio (902-928 MHZ) No FCC license required

3.9 HARDWARE "CONTROL CENTER CAMERA COMPUTER"

- Hardware Type	Computer
- Functions	Display video images and provide camera control.
- Location	Control center
- Data Name/Contents	Video images, control pan/tilt/zoom
- status	Existing
- Other	PC 486-66mhz DX2 w/ 200MB Disk

3.9.1 SOFTWARE "GRAPHICAL USER INTERFACE (GUI)"

- Software Type	Custom Windows based graphical user interface (GUI). Up to three images were displayed during operational test.
- Functions	Displays video images and camera settings.
- status	Existing
- Other	ADDCO Manufacturing Co.

3.10 HARDWARE "CMS AND HAR COMPUTER"

- Hardware Type	Computer
- Functions	Control Changeable Message Signs messages displayed and create new messages for the changeable message signs.
- Location	Control center
- Status	Existing
- Other	PC 486-based, vga, keyboard, dot matrix printer, modem

3.10.1 SOFTWARE "CHANGEABLE MESSAGE SIGN (CMS)"

- Software Type	CMS software
- Functions	Allows operators to develop new messages, send new or existing messages, or log into CMS and retrieve a record of the equipment status.
- status	Existing
- Other	ADDCO Manufacturing Co. custom DOS-based CMS controller software

3.11 HARDWARE "PORTABLE CHANGEABLE MESSAGE SIGN (CMS)"

- Hardware Type	Portable changeable message sign consisting of : CMS board, 120 VAC generator, trailer and cellular phone.
- Functions	Display traffic related messages.
- Location	In field
- Data Name/Contents	3-8 character lines of messages, each character consist of 18 inch high, 5x7 LED disk matrix.
- Data Type	Messages
- Status	Existing
- Other	Unit contains custom microprocessor controller with 64K of ROM and 32K of CMOS RAM and can store up to 25, 6-frame message sequences. Messages are stored in CMS but can be changed or updated using computer with custom ADDCO software and cellular telephone link.

3.12 HARDWARE "PORTABLE HIGHWAY ADVISORY RADIO (HAR)"

- Hardware Type	Portable radio, trailer, transmitter, digital recorder, antenna, roll-up ground system, cellular phone, batteries and 120 VAC generator.
- Functions	Communicate traffic and route information to event patrons.
- Location	In field (range of approximately 5 miles)
- Data Name/Contents	Voice message over radio
- Status	Existing
- Other	Mn/DOT license at frequencies of 1610 Khz or 530 Khz with adjustable O-l 0 Watts power output (normally set to 5W). Digital recorder provides up to 12, 1 minute messages. Messages are stored in HAR and can be changed and new messages added via cellular telephone link.

3.13 HARDWARE "PORTABLE TRAFFIC CONTROL SYSTEM'

- Hardware Type	Portable traffic control system
- Functions	Traffic control, used mainly to stop vehicles at pedestrian crossings located at either uncontrolled intersections or mid block crossings.
- Location	Where portable traffic control is needed at event.
- Data Name/Contents	Timing plans, phase intervals (green yellow red)
- Data Type	Data
- Constraints	Current system allows for only two way signal control. A four way traffic control system is currently under development by ADDCO.
- Other	ADDCO PTS-2000 portable traffic control signal system consisting of : two trailers, a diesel engine generator, signal heads and micro processor. Radio link allows two trailer to communicate information. System allows six modes of operation including: 3 manual control options, a vehicular sensing mode (when connected to vehicle detector), flashing red and fixed time.

4.1 INTERFACE	CCTV Camera
- Connects to . . .	Imagination Frame Crabber
- Interface location	Portable Camera Unit
- Interface Type	Video
- Interface Direction	Both
- Interface Component	RS-170
- Information Type/Content	Video image
- Information Direction	output
- Information Frequency	Continuous

4.2 INTERFACE	Pan/Tilt Control
- Connects to . . .	ADDCO Custom Module
- Interface location	Portable Camera Unit
- Interface Direction	Both
- Information Direction	Both
- Information Frequency	As needed by operator

4.3 INTERFACE	ADDCO Custom Module
- Connects to . . .	Digital I/O Card
- Interface location	Portable Camera Unit
- Interface Direction	Both
- Information Direction	Both
- Information Frequency	As needed by operator
4.4 INTERFACE	Hughes Spread Spectrum Radio
- Connects to . . .	Sealevel ACB-530 Interface Card
- Interface location	Control center and Portable Camera Unit
- Interface Type	Data
- Interface Direction	Both
- Interface Component	RS-422 Serial
- Information Type/Content	Compressed CCTV images and camera control commands
- Information Direction	Both
- Information Frequency	Continuous
4.5 INTERFACE	Hughes Spread Spectrum Radio - Remote Camera Computer Unit
- Connects to . . .	Hughes Spread Spectrum Radio - Portable Traffic Control Center
- Interface location	Control center and remote camera unit
- Interface Type	Radio
- Interface Direction	Both
- Interface Component	FM
- Information Type/Content	Compressed CCTV images and camera control commands
- Information Direction	Both
4.6 INTERFACE	CMS and HAR PC
- Connects to . . .	CMS and HAR
- Interface location	Control center, CMS and HAR
- Interface Type	Data
- Interface Direction	Both
- Interface Component	Cellular telephone
- Information Type/Content	Messages for CMS and HAR
- Information Direction	Both
- Information Frequency	As needed

4.7 INTERFACE	Traffic control operator
- Connects to . . .	Traffic control and parking personnel
- Interface location	Control center and field
- Interface Type	Audio
- Interface Direction	Both
- Interface Component	VHF Radio
- Information Type/Content	Instructions and observations
- Information Direction	Both
- Information Frequency	As needed

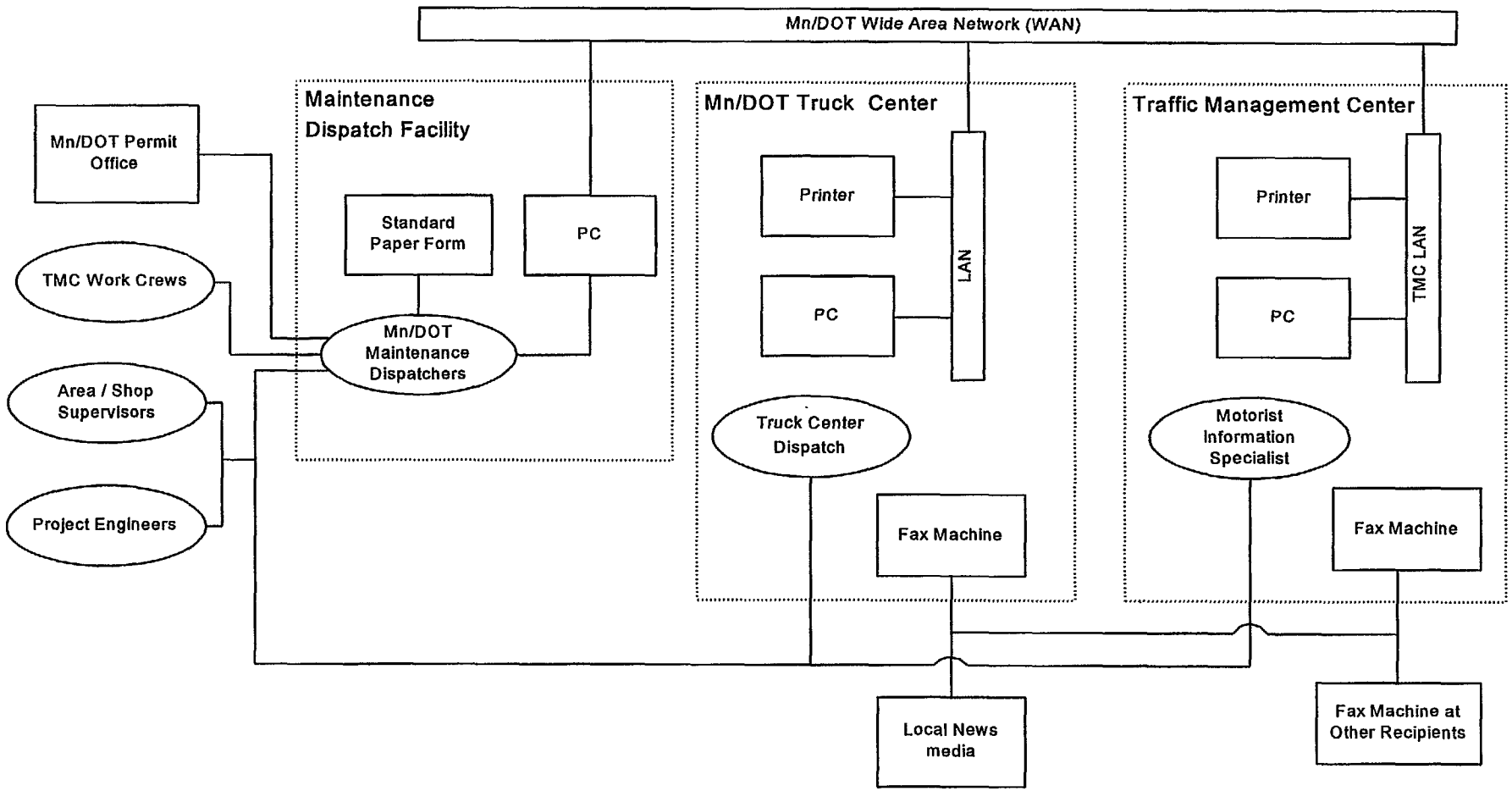
4.8 INTERFACE	Mn/DOT lead operator
- Connects to . . .	City/County Traffic control Personnel
- Interface location	Control center and field (intersection cabinet)
- Interface Type	Audio
- Interface Direction	Both
- Interface Component	Cellular phone or VHF Radio depending on availability
- Information Type/Content	Instructions to change signal timing plans and observations on traffic operations.
- Information Direction	Both .
- Information Frequency	As needed

4.9 INTERFACE	Mn/DOT Operator PC
- Connects to . . .	Mn/DOT Traffic control signal system master controller
- Interface location	Control center and field (arterial system master controller cabinet)
- Interface Type	Data
- Interface Direction	Both
- Interface Component	Service provider
- Information Type/Content	Signal timing plan changes
- Information Direction	Both
- Information Frequency	As needed

3.1.4 MN/DOT METRO DIVISION LANE CLOSURE INFORMATION SYSTEM

POLARIS As-Is Baseline Data Collection

Mn/DOT Metro Division Lane Closure Information System



lane_clo.pre
6 August 1996

AS-IS DATA COLLECTION TEMPLATE

1.0 AGENCY "MINNESOTA DEPARTMENT OF TRANSPORTATION"

- Agency Type	State transportation administration/operation department
- Agency Location(s)	Headquartered in St. Paul, MN with offices elsewhere

2.0 SYSTEM "MN/DOT LANE CLOSURE INFORMATION SYSTEM'

- Date of As-Is Data Collection	5/6/96
- Purpose	Disseminate information about lane restrictions in the Metro area.
- Hours of Operation	This system operates daily, but information about the following day's closures should be sent to the Traffic Management Center (TMC) no later that 3:00 p.m..
- Geographic Coverage	Mn/DOT Metro District
- Status	Existing
- Policies	The TMC attempt to verify all lane closure data prior to release
- Block Diagram	See attached
- Typical Operational Scenario	Most lane closure data comes from one of four sources: 1) The Mn\DOT Permit office, which reviews all requests to do work in the right-of-way 2) Project engineers, who oversee the progress of a construction project 3) Area or shop supervisors, who are directly involved in physically closing lanes 4) The TMC, which also does construction maintenance work in the right-of-way. All of these sources report lane closure information to the dispatchers at the Mn/DOT Maintenance dispatch facility where information is recorded onto a standardized paper form. The information on this form is re-keyed into the OfficeVision Mn/DOT WAN e-mail system for distribution to other Mn/DOT departments. At the TMC, the information from the OfficeVision system is verified by a Motorist Information assistant and re-keyed into a WordPerfect document template. The information is sent via fax to traffic reporters (see attached distribution list) and is used internally at the TMC for the KBEM Traffic Announcer and the Trilogy motorist information system. Information is also provided to the local news media via fax by the Truck Center facility, this is largely a legacy function and was not developed as a specific responsibility as part of this system.

2.1 PERSONNEL "MAINTENANCE DISPATCHER"

- Personnel Function	Receives lane closure information Records information on paper forms Keys information into OfficeVision system
- Location	Mn/DOT Maintenance Dispatch facility
- Status	Existing

2.2 PERSONNEL "MOTORIST INFORMATION SPECIALIST"

- Personnel Function	Receives and verifies lane closure information. Oversees production of lane closure bulletins, also may enter data in OfficeVision system
- Quantity	3
- Location	Mn/DOT TMC
- Working hours	Normal workday
- Status	Existing

2.3 PERSONNEL "TRUCK CENTER DISPATCH"

- Personnel Function	Receives lane closure information and keys information into the OfficeVision system
- Quantity	1
- Location	Mn/DOT TMC
- Working hours	Normal workday
- Status	Existing

3.1 HARDWARE "STANDARD PAPER FORM"

- Hardware Type	Paper hard copy
- Functions	Entry of lane closure of information into a standard form
- Location	Mn/DOT Maintenance Dispatch Center
- Data Name/Contents	Location (given as street/interstate name), direction, number of lanes, and approximate times of closures
- Data Type	Text
- Status	Existing
- Other	TMC contact indicated that a standardized form used by all sources of information would be desirable. Currently only Maintenance uses this form

3.2 HARDWARE "PC"

- Hardware Type	Intel-based desktop computer
- Functions	Entry of the information on the Standard Paper Form into the Office Vision e-mail system
- Location	MnDOT Maintenance Dispatch
- Data Name/Contents	See attached Example
- Data Type	Data
- Status	Existing

3.2.1 SOFTWARE "MS-DOS"

- Software Type	Operating system
- Status	Existing

3.2.2 SOFTWARE "OFFICEVISION"

- Software Type	WAN communications/scheduling software
- Functions	Distribution of the lane closure information through the OfficeVision e-mail system.
- Status	Existing
- Other	This is a comprehensive WAN integration package. Lane closure information is a relatively minor function

3.3 HARDWARE "MN/DOT WIDE AREA NETWORK (WAN)"

- Hardware Type	Wide area communications/data sharing computer network
- Functions	For this system, the WAN allows transmission of the lane closure data to other Mn/DOT entities
- Data Name/Contents	See attached Example
- Data Type	Data
- status	Existing

3.4 HARDWARE "TRUCK CENTER LAN"

- Hardware Type	Local area computer network
- Functions	Communications between computers Access to peripheral devices such as printers
- Location	MN/DOT Truck Center, South St. Paul
- Data Name/Contents	See attached Example
- Data Type	Data
- Status	Existing

3.5 HARDWARE "PC"

- Hardware Type	Intel-based desktop computer
- Functions	Accesses OfficeVision e-mail system to retrieve lane closure information. Allows operator to re-key lane closure information into a WordPerfect template and print a paper copy.
- Location	Mn/DOT Truck Dispatch facility
- Data Name/Contents	See attached Example
- Data Type	Data
- Status	Existing

3.5.1 SOFTWARE "MS-DOS"

- Software Type	Operating system
- Status	Existing

3.5.2 SOFTWARE "OFFICEVISION"

- Software Type	WAN communications/scheduling software
- Functions	Access e-mail system for retrieval of lane closure information keyed-in at the Maintenance Dispatch facility
- Status	Existing

3.5.3 SOFTWARE "NETWARE CLIENT"

- Software Type	Network operating system/communications protocol
- Software Standards	NetWare IPS/SPX
- Functions	Allows PC to communicate with other computers and peripherals connected to the Local Area Network (LAN)
- Status	Existing

3.5.4 SOFTWARE "WORDPERFECT"

- Software Type	Word processor
- Software Standards	Core1 WordPerfect (.wpd) standard
- Functions	Lane closure information is re-keyed from an e-mail message into a WordPerfect template to improve readability
- Status	Existing

3.6 HARDWARE "PRINTER"

- Hardware Type	Laser Printer
- Functions	Output of hard copy lane closure bulletins
- Location	Mn/DOT Truck Dispatch facility
- Data Name/Contents	See attached Example
- Data Type	Data
- status	Existing

3.7 HARDWARE "FAX MACHINE"

- Hardware Type	Facsimile machine
- Functions	Transits lane closure data to a pre-determined list of recipients
- Location	Mn/DOT Truck Dispatch facility
- Data Name/Contents	See attached Example
- Data Type	Data
- Status	Existing

3.8 HARDWARE "TMC LAN"

- Hardware Type	Local area computer network
- Functions	1) Connects to Mn/DOT WAN to retrieve lane closure data 2) Permits data sharing and communication between computers at the TMC 3) Permits access to peripherals, such as printers
- Location	Mn/DOT TMC
- Data Name/Contents	Lane closure data, see attached Example
- Data Type	Data
- Status	Existing

3.9 HARDWARE "PC"

- Hardware Type	Intel-based desktop computer
- Functions	Allows operator to retrieve lane closure information from the Mn/DOT WAN OfficeVision e-mail Information is re-keyed from OfficeVision into a WordPerfect document template
- Location	Mn/DOT TMC
- Data Name/Contents	See attached Examples
- Data Type	Data
- Status	Existing

3.9.1 SOFTWARE "MS-DOS"

- Software Type: Operating system
- Status: Existing

3.9.2 SOFTWARE "NETWARE CLIENT"

- Software Type: Network operating system/communications protocol
- Software Standards: NetWare IPX/SPX
- Functions: Allows PC to communicate with other computers and peripherals connected to the Local Area Network (LAN)
- Status: Existing

3.9.3 SOFTWARE "OFFICE VISION"

- Software Type: WAN communications/scheduling software
- Functions: Access e-mail system for retrieval of lane closure information keyed-in at the TMC
- Status: Existing

3.9.4 SOFTWARE "WORDPERFECT"

- Software Type: Word processor
- Software Standards: Core1 WordPerfect (.wpd) standard
- Functions: Lane closure information is re-keyed from an e-mail message into a WordPerfect template to improve readability
- Status: Existing

3.10 HARDWARE"PRINTER"

- Hardware Type: Laser printer
- Functions: Print hard copy lane closure information sheets for distribution
- Location: Mn/DOT TMC
- Data Name/Contents: See attached Example
- Data Type: Data
- Status: Existing

3.11 HARDWARE "FAX MACHINE"

- Hardware Type: Telephone facsimile machine
- Functions: Sends lane closure information from the TMC
- Location: Mn/DOT TMC
- Data Name/Contents: See attached Example
- Data Type: Data
- Status: Existing

3.12 HARDWARE "FAXMACHINE"

- Hardware Type	Telephone facsimile machine
- Functions	Receives lane closure information from the TMC
- Location	At each recipient on distribution list. See listing under interface 4.11
- Data Name/Contents	See attached Example
- Data Type	Data
- status	Existing

3.13 HARDWARE "FAX MACHINE"

- Hardware Type	Telephone facsimile machine
- Functions	Receives lane closure information from the Truck Dispatch facility
- Location	At each recipient on distribution list. Exact content of distribution list is not known other than the local news media receive information from the Truck Dispatch facility
- Data Name/Contents	See attached Example
- Data Type	Data
- Status	Existing

4.1 INTERFACE	MN/DOT MAINTENANCE DISPATCHERS
- Connects to . . .	1) Mn/DOT Permit Office 2) Project Engineers 3) Area/Shop Supervisors 4) TMC Work Crews
- Interface Type	Voice or data as fax hard-copy
- Interface Direction	Input
- Interface Component	Generally a telephone conversation, although fax use is becoming more common. Either method uses US West voice grade telephone lines
- Information Type/Content	Location, approximate start time and duration, number of lanes affected and direction of lanes closed
- Information Direction	Input
- Information Frequency	As needed, but generally daily
- Other	Project engineers and area/shop supervisors in some cases contact the Truck Center and/or the TMC directly with lane closure information.

4.2 INTERFACE	MN/DOT MAINTENANCE DISPATCHERS
- Connects to . . .	Standard Paper Form
- Interface location	Mn/DOT Maintenance Dispatch facility
- Interface Type	Text (handwritten on paper)
- Interface Direction	output
- Interface Component	Paper hard copy
- Information Type/Content	See attached Example
- Information Direction	output
- Information Frequency	As needed

4.3 INTERFACE	MN/DOT MAINTENANCE DISPATCHERS
- Connects to . . .	PC
- Interface location	Mn/DOT Maintenance Dispatch facility
- Interface Type	Data
- Interface Direction	output
- Information Type/Content	See attached Example
- Information Direction	output
- Information Frequency	As needed

4.4 INTERFACE	PC
- Connects to . . .	Mn/DOT WAN
- Interface location	Mn/DOT Maintenance Dispatch facility
- Interface Type	Data
- Interface Direction	Both
- Information Type/Content	See attached Example. Transmitted as OfficeVision e-mail
- Information Direction	Both
- Information Frequency	As needed

4.5 INTERFACE	Mn/DOT WAN
- Connects to . . .	Truck Dispatch LAN TMC LAN
- Interface location	At Truck Dispatch and TMC
- Interface Type	Data
- Interface Direction	Both
- Information Type/Content	See attached Example
- Information Direction	Both
- Information Frequency	As Needed

4.6 INTERFACE	TRUCK DISPATCH LAN
- Connects to . . .	PC
- Interface location	Mn/DOT Truck Dispatch facility
- Interface Type	Data
- Interface Direction	Both
- Interface Component	Ethernet (assumed 1 OBaseT)
- Information Type/Content	Input is OfficeVision e-mail lane closure information from Maintenance Dispatch Output is formatted information releases
- Information Direction	Both
- Information Frequency	As needed

4.7 INTERFACE	TRUCK DISPATCH LAN
- Connects to . . .	Printer
- Interface location	Mn/DOT Truck Dispatch facility
- Interface Type	Data
- Interface Direction	output
- Interface Component	Ethernet (assumed 1 OBaseT)
- Information Type/Content	Lane closure information for release to the local new media.
- Information Direction	output
- Information Frequency	As needed

4.8 INTERFACE	TMC LAN
- Connects to . . .	PC
- Interface location	Mn/DOT TMC
- Interface Type	Data
- Interface Direction	Both
- Interface Component	Ethernet (assumed 1 OBaseT)
- Information Type/Content	Input is OfficeVision e-mail lane closure information from Maintenance Dispatch Output is TMC lane closure information
- Information Direction	Both
- Information Frequency	As needed

4.9 INTERFACE	TMC LAN
- Connects to . . .	Printer
- Interface location	Mn/DOT TMC
- Interface Type	Data
- Interface Direction	output
- Interface Component	Ethernet (assumed 1 OBaseT)
- Information Type/Content	TMC lane closure information
- Information Direction	output

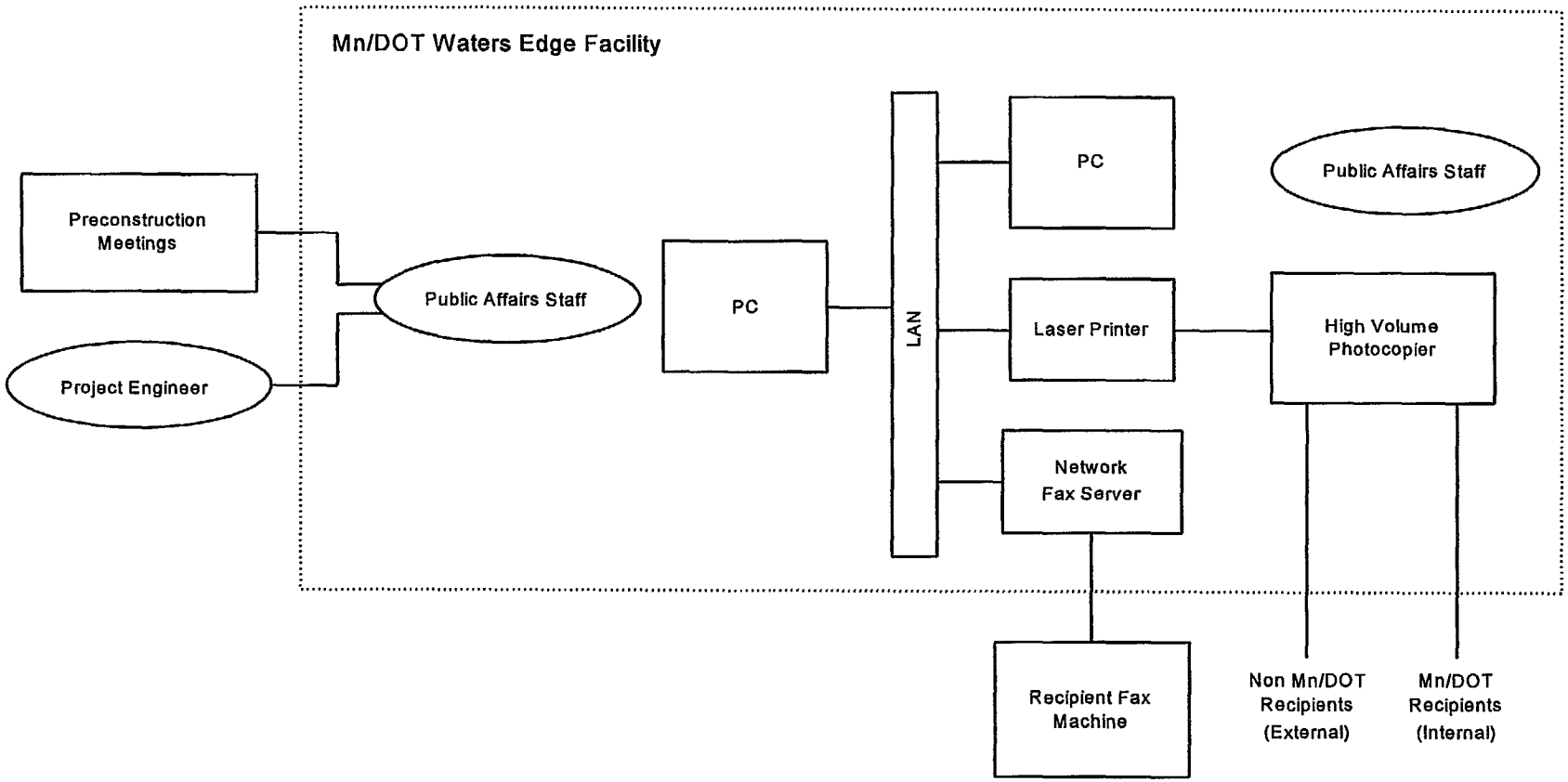
4.10 INTERFACE	TRUCK DISPATCH FAX MACHINE
- Connects to . . .	Local News Media Fax Machines
- Interface Type	Data
- Interface Direction	output
- Interface Component	US West voice grade telephone line
- Information Type/Content	Truck Dispatch lane closure information
- Information Direction	output
- Information Frequency	Daily

4.11 INTERFACE	TMC FAX MACHINE
- Connects to . . .	Fax machine of information recipients
- Interface Type	Data
- Interface Direction	output
- Interface Component	US West voice grade telephone line
- Information Type/Content	TMC lane closure information
- Information Direction	output
- Information Frequency	Daily (or as needed)
- Other	There may be some duplication of distribution between the TMC and Truck Dispatch. This is primarily due to the fact this system is evolutionary and was not created as a whole. The various components are not tightly coordinated. Distribution list for this interface is as follows: 1) KSTP Radio 2) Metro Traffic 3) WCC0 Radio 4) WIMN Radio 5) M.S.N. 6) KSTP-TV 7) WCCO-TV 8) Minneapolis Star-Tribune 9) St. Paul Pioneer Press 10) Metropolitan Council Transit Operations (MCTO) 11) Mn/DOT Public Affairs Coordinators

3.1.5 MN/DOT METRO DIVISION CONSTRUCTION INFORMATION SYSTEM

POLARIS As-Is Baseline Data Collection

Mn/DOT Metro Division Construction Information System



hotspots.pre
6 August 1996

AS-IS DATA COLLECTION TEMPLATE

1.0 AGENCY "MINNESOTA DEPARTMENT OF TRANSPORTATION"

2.0 SYSTEM "MN/DOT METRO DIVISION CONSTRUCTION INFORMATION"

- Date of As-Is Data Collection	5/l 3/96
- Purpose	Collect and distribute information about current Mn/DOT construction projects
- Geographic Coverage	Seven county metro area
- Contacts	Public Affairs Coordinator
- Status	Existing
- Recommended Improvements	Public Affairs Department is currently exploring various forms of electronic distribution, including e-mail and HTML via the World Wide Web; fax distribution to reader is less costly than mailing.
- Block Diagram	See attached
- Typical Operational Scenario	This system draws its information primarily from the project engineers who are responsible for the progress of the project. The initial list of projects for a given construction season is generated by the Mn/DOT Metro division's Planning Department. Each year, the planning department determines the highest priority projects based on available funding and informs the Public Affairs Department of it's conclusions. The Public Affairs Department the begins a series of meeting with the affected county governments to identify potential conflicts with construction scheduling. After all conflicts have been resolved, a final list of projects with approximate start and finish dates is disseminated via press releases to all major media, hospitals, law enforcement agencies, travel information centers, local units of government, affected Mn/DOT employees and other Mn/DOT Districts.

- Typical Operational Scenario	A press release is also issued to affected entities prior to the beginning of any individual project. During the construction season, Public Affairs personnel are assigned a subset of the projects lists on the annual construction plan. Each person is then responsible for tracking the progress of their project during the course of the construction project. This generally means making telephone contact with the project engineer to verify the beginning date of a project, and then weekly contact to monitor progress thereafter until the completion of the project. The project engineer supplies the current status of the project and any change to the project completion date. The Public Affairs staff collaborate on a Microsoft Word document which is ultimately paginated and formatted by the Public Affairs Coordinator and faxed or mailed to a wide variety of recipients.

2.1 PERSONNEL "PROJECT ENGINEER"

- Personnel Function	Reports progress of construction projects
- Quantity	Variable (12-15)
- Workload	The reporting function is a minor part of the Project Engineers workload
- Working hours	Regular workday
- Status	Existing
- Other	Project Engineers are not directly involved in the creation of the HOT SPOTS bulletin. Their responsibility is primarily to communicate with the Public Affairs staff about ongoing construction.

2.2 PERSONNEL "PUBLIC AFFAIRS STAFF"

- Personnel Function	1) Receives updates on construction progress from Project Engineers 2) Enters updated information into MS Word Document
- Quantity	Four, Three inputting data and one editor
- Location	Mn/DOT Waters Edge Facility, Roseville, MN
- Workload	The reporting function is a minor part of the Public Affairs Staff workload
- Working hours	Regular workday
- Status	Existing

2.3 PERSONNEL "PUBLIC AFFAIRS COORDINATOR"

- Personnel Function	1) Receives updates on construction progress from Project Engineers 2) Enters updated information into MS Word document 3) Paginates and formats document for distribution
- Quantity	One
- Location	Mn/DOT Waters Edge Facility, Roseville, MN
- Workload	The reporting function is a minor part of the Public Affairs Coordinator workload
- Working hours	Regular workday
- Status	Existing

3.1 HARDWARE "PC (PUBLIC AFFAIRS STAFF)"

- Hardware Type	Intel-based desktop computer
- Functions	Edit HOT SPOTS document stored on LAN
- Location	Mn/DOT Waters Edge Facility, Roseville, MN
- Data Name/Contents	See attached Example
- Data Type	Data
- Status	Existing

3.1.1 SOFTWARE "MS DOS/WINDOWS"

- Software Type	Operating system
- Status	Existing

3.1.2 SOFTWARE "MS WORD"

- Software Type	Word Processor
- Software Standards	MS Word (.DOC) format
- Functions	Allows multiple users to access and update the information in the HOT SPOTS document
- status	Existing

3.1.3 SOFTWARE "NETWORK CLIENT"

- Software Type	LAN client software
- Software Standards	Specific network configuration was not collected
- Functions	Allows computer to communicate and access peripherals connected to the LAN
- Status	Existing

3.2 HARDWARE"LAN"

- Hardware Type	Local Area Network
- Functions	Stores and allows multiple users to access the HOT SPOTS document
- Location	Mn/DOT Waters Edge Facility, Roseville, MN
- Data Name/Contents	See attached Example
- Data Type	Data
- Status	Existing

3.3 HARDWARE "PC (PUBLIC AFFAIRS SUPERVISOR)"

- Hardware Type	Intel-based desktop computer
- Functions	Edit HOT SPOTS document stored on LAN Format and paginate HOT SPOTS document for distribution
- Location	Mn/DOT Waters Edge Facility, Roseville, MN
- Data Name/Contents	See attached Example
- Data Type	Data
- Status	Existing

3.3.1 SOFTWARE "MS DOS/WINDOWS "

- Software Type	Operating system
- Status	Existing

3.3.2 SOFTWARE "MS WORD"

- Software Type	Word Processor
- Software Standards	MS Word (.DOC) format
- Functions	Allows multiple users to access and update the information in the HOT SPOTS document
- Status	Existing

3.3.3 SOFTWARE "NETWORK CLIENT"

- Software Type: LAN client software
- Software Standards: Specific network configuration was not collected
- Functions: Allows computer to communicate and access peripherals connected to the LAN
- Status: Existing

3.4 HARDWARE "LASER PRINTER"

- Hardware Type: Plain paper laser printer
- Functions: Print hard copy of HOT SPOTS bulletin for photocopying
- Location: Mn/DOT Waters Edge Facility, Roseville, MN
- Data Name/Contents: See attached Example
- Data Type: Text/data
- Status: Existing

3.5 HARDWARE "HIGH VOLUME PHOTOCOPIER'

- Hardware Type: Electrostatic photocopier
- Functions: Reproduce HOT SPOTS bulletin for distribution
- Location: Mn/DOT Waters Edge Facility, Roseville, MN
- Data Name/Contents: See attached Example
- Data Type: Text/paper hard copy
- status: Existing

3.6 HARDWARE "NETWORK FAX SERVER"

- Hardware Type: Network client PC with Fax board installed
- Functions: Transmits HOT SPOTS in fax format
- Location: Mn/DOT Waters Edge Facility, Roseville, MN
- Data Name/Contents: Fax data transmission of HOT SPOTS. See Example
- Data Type: Data
- Status: Existing

3.7 HARDWARE "RECIPIENT FAX MACHINE"

- Hardware Type	Telephone-based fax machine
- Functions	Receives HOT SPOTS bulletin
- Location	At recipients who have requested fax distribution
- Data Name/Contents	HOT SPOTS- see attached Example
- Data Type	Data
- Status	Existing

4.1 INTERFACE	Project Engineer
- Connects to . . .	Public Affairs Staff
- Interface Type	Voice or text
- Interface Direction	output
- Interface Component	Generally telephone, but fax is occasionally used
- Information Type/Content	Updates on construction project progress
- Information Direction	output
- Information Frequency	Weekly or as necessary

4.2 INTERFACE	Preconstruction Meetings
- Connects to . . .	Public Affairs Staff
- Interface Direction	output
- Interface Component	Attendance at meetings
- Information Type/Content	Overall plans and time lines for a construction project about to begin. (i.e. type of work to be performed, approximate dates of start and finished of each phase, approximate location of project)
- Information Direction	output
- Information Frequency	As needed

4.3 INTERFACE	PC (Public Affairs Staff)
- Connects to . . .	LAN
- Interface location	Mn/DOT Waters Edge Facility, Roseville, MN
- Interface Type	Data
- Interface Direction	Both
- Interface Component	Ethernet (1 OBaseT)
- Information Type/Content	Updates to the HOT SPOTS document
- Information Direction	Both
- Information Frequency	Interface operates continuously, updates are made as needed

4.4 INTERFACE	LAN
- Connects to . . .	PC (Public Affairs Coordinator)
- Interface location	Mn/DOT Waters Edge Facility, Roseville, MN
- Interface Type	Data
- Interface Direction	Both
- Interface Component	Ethernet (1 OBaseT)
- Information Type/Content	1) Updates to the HOT SPOTS document 2) Final formatting for the HOT SPOTS weekly bulletin
- Information Direction	output
- Information Frequency	Interface operates continuously, updates are made as needed, formatting is done weekly

4.5 INTERFACE	LAN
- Connects to . . .	Laser printer
- Interface location	Mn/DOT Waters Edge Facility, Roseville, MN
- Interface Type	Data
- Interface Direction	Both
- Interface Component	Ethernet (1 OBaseT)
- Information Type/Content	Final, formatted versions of HOT SPOTS
- Information Direction	output
- Information Frequency	As needed

4.6 INTERFACE	LAN
- Connects to . . .	Network fax server
- Interface location	Mn/DOT Waters Edge Facility, Roseville, MN
- Interface Type	Data
- Interface Direction	Both
- Interface Component	Ethernet (1 OBaseT)
- Information Type/Content	Final, formatted versions of HOT SPOTS to be faxed to recipients
- Information Direction	both
- Information Frequency	Weekly

4.7 INTERFACE	Laser Printer
- Connects to . . .	High volume photocopier
- Interface location	Mn/DOT Waters Edge Facility, Roseville, MN
- Interface Type	Physically moving the hard copy
- Interface Direction	output
- Interface Component	Paper hard copy
- Information Type/Content	HOT SPOTS - see attached Example
- Information Direction	output
- Information Frequency	Weekly

4.8 INTERFACE	High Volume Photocopier
- Connects to . . .	Non-Mn/DOT recipients
- Interface Type	Paper
- Interface Direction	output
- Interface Component	US Postal Service
- Information Type/Content	Copies of HOT SPOTS
- Information Direction	output
- Information Frequency	Weekly
- Other	HOT SPOTS is generally mailed out on Tuesdays to make many publications' Wednesday deadline.

4.9 INTERFACE	High Volume Photocopier
- Connects to . . .	Mn/DOT recipients
- Interface Type	Paper
- Interface Direction	output
- Interface Component	Inter-office mail service
- Information Type/Content	Copies of HOT SPOTS
- Information Direction	output
- Information Frequency	Weekly

4.10 INTERFACE	Network Fax Server
- Connects to . . .	Recipient fax machines
- Interface Type	Data
- Interface Direction	output
- Interface Component	US West voice grade telephone line
- Information Type/Content	HOT SPOTS
- Information Direction	output
- Information Frequency	Weekly
- Other	HOT SPOTS is generally mailed out on Tuesdays to make many publications' Wednesday deadline.

APPENDIX A

As-Is Agency Reports
Pre-Survey Candidate Systems List

PRE-SURVEY CANDIDATE SYSTEMS

Traffic Signal Control Systems
- City of St. Paul Computran traffic signal control system
- City of St. Paul traffic signal intersection hardware (field equipment)
- City of Minneapolis Fortran traffic signal control system
- Mn/DOT Metro Division/District traffic office closed loop traffic signal system(s)
- County closed loop traffic signal systems (Hennepin, Ramsey, etc.)
- City closed loop traffic signal systems
- Video detection/control of signal system (T.H. 65 & 53rd, Lyndale and Franklin Ave)
- Pre-emption of traffic signals for emergency vehicles (EVP)
- Pre-emption of traffic signal at fire stations
- Pre-emption of traffic signals at railroad crossings (20 locations in Metro area)
- Minneapolis AUSCI operational test

Freeway Management System
- Mn/DOT TMC ramp meter system
- MnDOT TMC video surveillance system
- Mn/DOT TMC CMS control system
- KBEM radio broadcast system
- Mn/DOT TMC cable TV information system - (Triple Vision system)
- Mn/DOT Metro Division/District portable changeable message signs
- TMC traffic history database (volume and occupancy data)
- TMC incident log database
- U of M Autoscope incident detection system
- Genesis operational test
- Trilogy operational test
- Mn/DOT workzone traffic management system operational test

Transit Management Systems
- MCTO "Trapeze" scheduling/planning system (creates bus/driver schedules)
- MCTO "radio" system (computer assisted radio system, 7 channels)
- MCTO automatic passenger counters (on some buses)
- MCTO electronic fare collection boxes (on all buses)
- MCTO TIC BusLine system (voice responses system, customer service system)
- MCTO customer service system for route/schedule planning (live telephone operators)
- MCTO transportation section (provides construction information to MCTO)
- MCTO bus stop database (contains the attributes of each bus stop)
- MCTO Police crime/incident tracking system
- MCTO Opticom emitters (EVP on 80 buses)
- MCTO speed light system (ramp meter pre-emption on selected ramps)
- MCTO Route-0-Matic system - vectors around incidents and congestion
- Metropolitan Council Rideshare system (Mn dial-a-ride)
- MCTO funded paratransit systems
- Metropolitan Council Metro Mobility passenger registration system
- Metropolitan Council Metro Mobility passenger reservation system
- U of M transit management
- Southwest Transit
- Minnesota Valley Transit
- Plymouth Metrolink
- School bus dispatch systems

Incident Management Program
- Mn/DOT TMC Highway Helper program (including AVL system)
- Private tow contracts
- U of M police incident management
- St. Paul DIVERT operational test

Electronic Fare Payment Systems
- City of Minneapolis Parking fare collection (smart card)
- City of Minneapolis electronic parking meter maid system
- Smart Darts operational test

PRE-SURVEY CANDIDATE SYSTEMS (CONTINUED)

Electronic Toll Collection Systems
- Toll road proposals (5 proposals in MN)
- Congestion Pricing Study
- Mileage based tax study

Multi modal Traveler Information Systems
- Travlink operational test

Administrative Systems
- Mn/DOT Electrical Services maintenance management system
- Mn/DOT Electrical Service gopher state one-call access system
- Mn/DOT TIS
- Mn/DOT automatic traffic recorder system
- Mn/DOT ISTEA management systems
- Mn/DOt CVO administrative systems
- DPS CVO administrative systems
- Ci of Minneapolis sign database

Other Information Systems
- Airline flight arrival/departure information - NW
- Airport rental car kiosk - Hertz
- Mn Office of Tourism travel information center kiosks
- Mn/DOT TMC road weather information system access
- Mn/DOT Metro Division weather information access
- Mn/DOT Aeronautics weather information system
- MnDOT statewide road weather information telephone information
- Mn/DOT Pavement Condition and Weather Reporting System - future
- Internal distribution system Distribution of TMC loop data via the Internet
- RWIS - Mn/DOT future Road/Weather Information System

Emergency Response Systems
- Motorist call box system
- Mobile Data Termmals (MDT) in all State Patrol cars
- Laptop PC's in State Patrol cars to replace MDT's - pilot project in 1996
- Emergency 911 log system at State Patrol
- State Patrol information desk
- State Patrol South St. Paul information desk
- State Patrol access to drivers license information. via 911 center
- Mn/DOT Mayday operational test
- Demand response dispatch systems - numerous standalone systems

Parking Management Systems
- Metropolitan airports commission parking management
- City of Minneapolis parking management systems
- U of M parking management
- St. Paul Advanced Parking Information System operational test

Miscellaneous
- Mn/DOT portable traffic management system
- City of Mmneapolis police special event management
- City of St. Paul special event management
- U of M special eventmana ement
- Mn/DOT pilot differential PSG broadcast base station
- Mn/DOT maintenance vehicle AVL
- Mn/DOT Metro Division/District maintenance dispatch
- Hennepin County Medical Center emergency vehicle dispatch
- MN Pollution Control Agency air quality monitorin sites
- Met. Council Forecasting models - uses data from Mn/DOT TIS database
- U of M traffic management system proposal

Intera ency Systems
- ICTM - Integrated Corridor Traffic Management System operational test includes Autoscope)
- ARCTIC - operational test in Virginia, MN

PRE-SURVEY CANDIDATE SYSTEMS (CONTINUED)

CVO Systems
- List of systems from MN Guidestar
- CVO call-in number
- State Patrol toll free Information number

Construction Information/Notification Systems
- Gopher State One Call system for utility locations
- Mn/DOT construction information dissemination
- Counties' systems (Hennepin County)
- Counties' systems (Ramsey County)
- City system (Minneapolis)
- City system (St. Paul)
- Utilities' systems

Communications Systems
- Mn/DOT TMC Fiber optic data communications system
- Mn/DOT Microwave Communication System
- Mn/DOT Tl system
- MnDOT Wide Area Network
- MNET (STARS)
- Voice radio - State Patrol, Mn/DOT Maintenance, DNR
- 800 MHZ Trunked Radio system (Metro area)
- Internet Communications
- Traffic Signal Interconnect systems
- RBDS - Radio Broadcast Data Systems
- Mn/DOT Video Conferencing

APPENDIX B

As-Is Agency Reports
Data Collection Guide

Minnesota Guidestar

As-Is Transportation Systems Inventory Data Collection Guide

LORAL
Federal Systems–Owego

POLARIS As-k Transportation Systems Inventory
Data Collection Guide

PURPOSE

The purpose of this document is to provide information about the Polaris As-Is Transportation Systems Inventory Template. Information provided by this guide is representative but not inclusive as to the amount or all the types of information that may be found during a Polaris survey.

ORGANIZATION

Organization of this document is based on the Polaris As-is Transportation Systems Inventory Template. For each template page in the Polaris As-is Transportation Systems Inventory Template, a section in this document, will list the types of information to be collected, a description of how the data will be collected, recommended answers for known entities, and miscellaneous note area for unstructured items. The following list contains this documents sections:

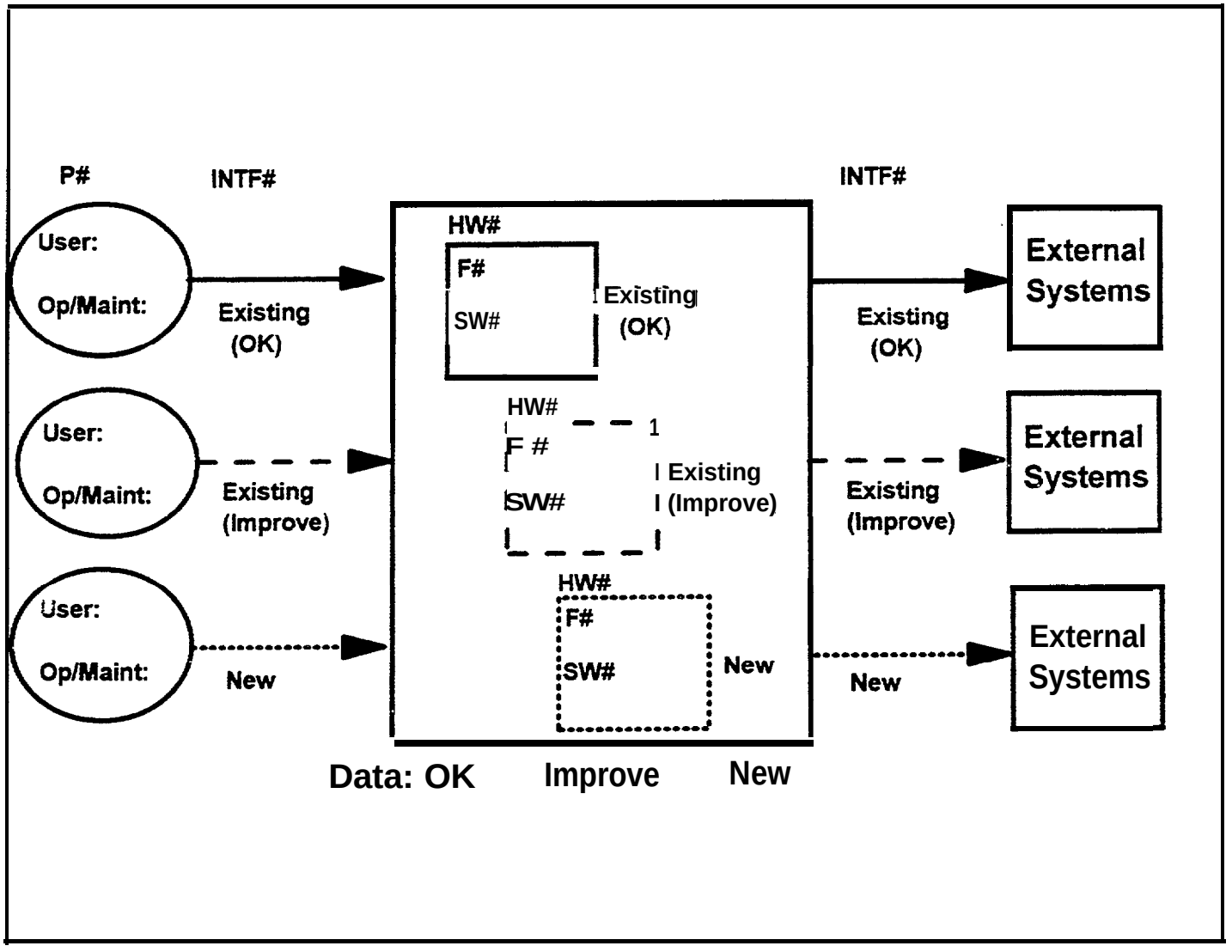
1.0 Systems
1.1 Hardware Components
1.2 Software Components
1.3 Software Interfaces
1.4 System Personnel
2.0 Agency
2.1 Agency Interfaces
2.2 Agency Systems

About the Template Document

The Polaris As-Is Transportation Systems Inventory Template is a document intended to assist the data collector in the field perform their task more expediently. The document is a collection of 8 sections that are identical to the sections in this document. Seven of sections are on one sheet of paper. One section expanded to two sheets of paper. The theory of the document structure was to duplicate each document section numerous until the entire system, or what ever thing you are collecting data on is captured on the templates.

1.0 Systems

In order to understand the system being surveyed, the surveyor shall draw the system in block diagram format. The block format shall conform to the following example. Template Page #1 is where the system block diagram shall be drawn.



1 .1 Hardware Components

The purpose of Hardware Components, Template Page #1, is to list all the various hardware elements that are interconnected to form the bounds of the system to be described. For each hardware element, an identifier, HW#, shall be created and associated with hardware element graphic drawn in the System Block Diagram, Template Page #1

Template Page #1 contains the following columns to be completed during the survey process. Definitions for each column is provided to assist in providing consistency in collecting data. Where possible, suggested recommendations for collecting data is provided.

HW#	Identifier for each component on the System Block Diagram (drawing). Each identifier used with the System Block drawing shall be unique for each System Block Diagram.
Hardware Name	A generic name for identification purposes within the user community. If no name is provided, then the Manufacturer and Model number is acceptable.
Hardware Type	Classifies the identifier, HW#, into a generic group. If the type of component is not known, then Make and Model will be required. Recommended choices for this column may be selected from the following list: 1. Computer Processors 2. Workstations 3. Telecommunication Devices a. Hubs b. Routers c. Transmitters d. Receivers e. Modems f. Decoders/Encoders 4. Peripherals a. Printers b. Displays

c. Barcode Readers
d. Magnetic Stripe Readers
e. Punch Cards
f. Magnetic Tape
g. Diskette
h. CD ROM
i. Cartridge Tape

5. Telephones
   a. Wire Based
   b. Wireless
6. Two way Radio Transmitters/ Receivers
7. Radio Receivers
8. Traffic Signals
9. Video Cameras
10. Loop Detectors
11. Message Signs
12. Temperature Sensors
13. Optical Transmitters / Receivers
14. Microwave

Functions - (F#)

Describes the major functions of the system. For each major function, a new entry lines shall be used for writing the description. For each function, the F# is associated to the respective HW# on the System Block Diagram, Template Page #1 The following list contains some recommended functions that may be used to describe a component.

1. Process
2. Control
3. Store
4. Communicate
5. Signal
6. Log
7. Record
8. Speak
9. Write
10. Print
11. Messaging
12. Locate
13. Search

Location

States where geographically the HW# is located.

Considerations should be given for : Multiple buildings within one community, multiple cities, multiple states, countries and other Agencies or private sector. Try to limit the information to Building Name and relevant geographic location versus room number or address. Detailed information is not required unless there is multi-jurisdictional or multi-organizations within one building.

Data Name / Content

A brief description of the data or information is processed and stored by the HW#. Some examples are:

1. Database of System Users
2. Database of construction projects
3. Collect incident information and reformat the data

Data Type

Classifies the data into a generic group. Choices for this group are:

1. Voice
2. Data
3. Video
4. Paper
5. Other ____(specify) _____

Status

An indicator about the existence, transition, or non-existence of the HW#:

E=Existing (Currently in place, No modifications planned)
D=Deleted (An agency has plans to delete this element in the future, but at the time of survey the element existed.)
I=lmprove (Currently in place, but requires modification due to element not meeting user needs, or system needs)
N=NEW (New system planned for future deployment, but at the time of survey is not currently deployed.)

Policies

List agency policies that are practiced with respect to the Hardware components. Listed below are a couple of examples of what would belong in this topic.

1. Maintenance of the radio equipment
2. Agency X requires all PC's to be hardware locked and anchored to a non-removable building structure.

Constraints / Restrictions

List agency constrained and/or restrictions with respect to

Hardware Components

1. The hardware is outdated and can no longer be upgraded.

2. Hardware maintenance is not available for the equipment because it is too old.

Issues — List any issues that are related to this specific component. If the issue is global to the system, then is only needs to be stated once.

Recommended Improvements / Planned Changes

List any system or component recommended improvement that the contact person discusses. State whether the improvement is planned or a "wish" and explain why they system and component is being improved. If the improvement is global to the system, then is only needs to be stated once.

Contacts / Phone Numbers

List the contact person from which you recieved this information and their phone number.

Other — List anything else that may be relevant about the system, but does not fit in the above columns,

1.2 Software Components

SW# — [Same description as HW# in Section 1 .1]

Software Name — [Same description as Hardware Name # in Section 1 .1]

Software Type — Classifies the identifier, SW#, into generic groups

1. Transportation Software Applications
2. Operating Systems
3. Communication Protocols
4. Database
5. Data Interchange
6. User Interface
7. System Management
8. Office Applications
9. Controller Programs
10. Firmware

Software Standards — Specify for each software type the associated product or standard. The following list is organized with the standards listed within software type.

1. Transportation System Applications
   a. Urban Traffic Control Sofware (UTCS)
   b. Sindney Control Adaptive Device Software (SCADS)
   c. SOOTS
   d. 170 Software -WAPITI
   e. National Electrical Materials Association (NEMA) Software
   f. TRAPEZE
   g. AVL

2. Operating System
   a. DOS
   b. WINDOWS
   c. WINDOWS FOR WORKGROUPS
   d. WINDOWS95
   e. UNIX

f. OS/2
g. WINDOWS NT
h. Macintosh / System 7
i. OS/400
j. MVS
k. VM
l. VSE
m. VMS/VSE
Other

3. Communication Protocols
   a. TCP/IP (UNIX, IBM, Microsoft, Beamon Whiteside, Exceed, FTP)
   b. SNA (IBM)
   c. IPX/SPX (Novell)
   d. OSI
   DECnet (Digital Equipment)
   f. BISYNC
   g. Frame Relay
   h. X.25
   i. FDDI
   j. ATM
   k. NetBios (IBM, Microsoft)
   l. Other
4. Database
   a. Oracle
   b. Sybase
   c. Informix
   d. Database 2
   e. FoxPro
   f. Microsoft Access
   g. Other
5. Data Interchange
   a. GIS
   b. Image
   c. Vector
   d. Vector Graphics
   e. Images
   f. Printing (PostScript, PCL, AFP)
   g. Computer Aided Logistics (CALS)
   h. Electronic Data Interchange (EDI)
   i. Electronic Mail (Email)
   j. Electronic Documents

k. Traffic Messaging
l. Weather Messaging
m. Location Messaging
n. Construction Messaging
o. Other

6. User Interface
   a. Windows (Microsoft)
   b. Windows for WorkGroups (Microsoft)
   c. X-windows (UNIX)
   d. Presentation Manager (IBM OS/2)
   e. Character Based
   f. Other
7. System Management
   a. Network
   b. Computer Devices
   c. Data
   d. Other
8. Office Applications
   a. Word Processors (WordPerfect, MS Word, DisplayWrite)
   b. Spreadsheets (123, Excel, Quattro Pro)
   c. Graphics (Corel Draw, MS PowerPoint, Freelance)
   d. Multimedia (Video Conferencing)
   e. Project Scheduling (Microsoft Project, Primivera)
   f. Other

Function

[Same description as Function in Section 1.1]

Application Language

This field is only applicable for Software Types of Transportation Software Applications when there is a software application that has been custom designed and coded for a specific need or requirements. (ie. There is only one or few software applications in existence) Then the programming language of the software application should be determined. The following list provides some of programming languages that may have been used:

1. c++
2. Visual C++
3. c
4. Visual C
5. Basic
6. Visual Basic

7. Pascal
8. COBOL
9. FORTRAN
10. Assembler
11. Ada
12. Other

Status — [Same description as Status in Section 1 .1]

Policies — List agency policies that are practiced with respect to Software Components. Listed below are a couple of examples of what would belong in this topic.

1. Agency X does not permit any non-business related software to be installed on PC's .

2. Agency X requires all PC's Operating Systems to have password protection to prevent unauthorized system access to the networks.

Constraints / Restrictions — List agency constrained and/or restrictions with respect to Software Components

1. The software is outdated and can no longer be upgraded.

2. Software maintenance is not available for the equipment because it is too old.

Issues — List any issues that are related to this specific componenet. If the issue is global to the system, then is only needs to be stated once.

Recommended Improvements / Planned Changes

List any system or component recommended improvement that the contact person discusses. State whether the improvement is planned or a "wish" and explain why they system and component is being improved. If the improvement is global to the system, then is only needs to be stated once.

Contacts / Phone Numbers

List the contact person from which you recieved this information

	and their phone number.
Other	List anything else that may be relevant about the system, but does not fit in the above columns.

1.3 System Interfaces

The purpose of System Interfaces, Template Pages #5-7, is to list all the various interfaces that connect the Hardware Components together and External Systems to the system being surveyed. For each Hardware Component, HW#, listed, the interface, INTF#, between the two components shall be listed individually until all the interfaces between Hardware Components are covered. For Systems outside the boundary of the system being surveyed, their respective interfaces shall be listed.

INTF#	[Same description as HW# in Section 1 .1]
External System Name	[Same description as Hardware Name in Section 1 .1]
Interface Locations	States which locations the interfaces are located. If the interface is co-located in the same location, then only one location is required.
Interface Type	Classifies the interface into a generic group. Choices for this group are: 1. Audio 2. Data 3. Video 4. Paper 5. Other _____(specify)_____
Interface Direction	Three choices are available for this item. Circle the applicable item. Input — Flow of information is coming in to the surveyed system or component being described output — Flow of information is going towards another component or external system. Both — Flow of information is going both directions.
Interface Component	A name of the physical entity in which the interface is established. The following list contains some more popular types of Interface Components:

1. Wire Based
   a. Token Ring
   b. Ethernet
   c. FDDI
   d. SONET
   e. Arcnet
   f. Applenet
   g. ATM
   h. ISDN
   i. RS-232
   j. RS-422
   k. SDLC
   l. Modems (Bell 202,212,213, V.24, V.32 V.34)
   m. Other _____
2. Wire Based Media (cabling), if there is an external network geographically located.

   For wire based media (cabling), the wire/fiber count should be captured to
   a. Level 3 Unshielded Twisted Pair (UTP), (Telephone Voice / Data 2 MB)
   b. Level 4 Unshielded Twisted Pair,(UTP) [Data 10 MB]
   c. Level 5 Unshielded Twisted Pair,(UTP) [Data 100 MB]
   d. Shielded Twisted Pair (STP) [Data rate at 10 MB]
   e. Shielded Twisted Pair (STP) [Data rate at 100 MB]
   f. Multimode Fiber
   g. Single Mode Fiber
   h. Service Provider (ie. US West)
   i. Other _____
3. Wireless Based
   a. FM (ie. Two way / Broadcast)
   b. AM (ie. Broadcast)
   c. CDPD (ie. Digital Cellular Data Network)
   d. Ardis (ie. Digital Cellular, Two way paging)
   e. AMP (ie. Cellular Telephone)
   f. Microwave
   g. Other

Protocol / Standard — The interface should have a protocol or other standard

associated with how it operates. In some instances there will be multiple protocols and standards associated with the interface. All protocols and standards shall be listed. The following list identifies some of the protocols / standards that may be found.

a. TCP/IP (UNIX, IBM, Microsoft, Beamon Whiteside, Exceed)
b. SNA (IBM)
c. IPX/SPX (Novell)
d. OSI
e. DECnet (Digital Equipment)
f. BISYNC
g. Frame Relay
h. x.25
i. FDDI
j. ATM
k. NetBios (IBM, Microsoft)
l. Video (ie. Manchester Code Based)
m. Other

Information Type / Content

A description of the information that is being passed through the interface. (ie. road conditions, Traffic congestion, road construction information)

Information Direction

Three choices are available for this item. Circle the applicable item.

Input	Flow of information is coming in to the surveyed system or component being described
Output	Flow of information is going towards another component or external system.
Both	Flow of information is going both directions.

Information Frequency

Specify what rate the data is exchanged between components

Information Standards

List any standards that are identified with the information being processed. Some areas where standards may be present presented listed in the following list:

1. If location information is provided, what is the units or other location attributes provided?
   a. Street Names of the nearest intersections
   b. Mile Markers
   c. Latitude / Longitude
   d. Addresses
   e. Internal Travel Interchange Standard
   f. State / Plane Coordinate
   g. Links / Nodes
   h. Other
2. Traffic Messaging
3. Weather Messaging
4. Location Messaging
5. Construction Messaging
6. Mapping Standards (GIS)
   a. Image
   b. Vector
7. Electronic Mail (Email)
8. Electronic Data Interchange (EDI)
9. Computer Aided Logistics (CALS)

Policies

List agency policies that are practiced with respect to System Interfaces. Listed below are a couple of examples of what would belong in this topic.

1. Agency X only operates the interface with System A Monday - Friday, 8AM - 5PM.
2. Agency Y requires authorization to use Agency X interfaces to their systems.

Constraints / Restrictions

List agency constraints and/or restrictions with respect to System Interfaces:

1. The interface hardware is outdated and can no longer be upgraded.
2. The maintenance of the interface is only supported by a vendor specializing in RF transmitters.

Issues

List any issues that are related to this specific componenet If

the issue is global to the system, then is only needs to be stated once.

Recommended Improvements / Planned Changes

List any system or component recommended improvement that the contact person discusses. State whether the improvement is planned or a “wish” and explain why they system and component is being improved. If the ‘improvement is global to the system, then is only needs to be stated once.

Contacts / Phone Numbers

List the contact person from which you recieved this information and their phone number.

Other

List anything else that may be relevant about the system, but does not fit in the above columns.

1.4 System Personnel

The purpose of System Personnel, Template Page #9, is to capture the interaction a human being with the system being surveyed. For each type of personnel using the system, a P# shall be created on the System Block Diagram to identify the personnel and where they interface with the system.

P##	[Same description as HW# in Section 1.1]
Personnel Role	A description of the personnel interfacing with the system. Some examples of a role are: 1. System Maintainer 2. Data Input 3. Data Analysis 4. Data Collector 5. User 6. Other
Quantity	Approximate quantity of personnel who perform this particular role. A individual may have more that one personnel role in working with the system, therefore may be counted more that once.
Location	[Same description as HW# in Section 1.1]
Workload	Approximate amount of time per week the personnel spends interfacing with the system. The amount should be estimated on the total quantity of personnel for each role. Circle the appropriate designator on the template. Each designator is described in the following list. E Extensive Use = 90-100% Utilization H High - average hours are >70 - 120 per week M Medium - average hours are 30 -60 per week L Low - average hours are <20 per week
Status	[Same description as Status in Section 1.1]
Policies	List agency policies that are practiced with respect to System

Personnel. Listed below are a couple of examples that may be found in this topic.

1. Agency X only operates the System A with the System Administrator, Monday - Friday, 8AM - 5PM.
2. Educational requirements to operate System B is experience with UNIX.

Constraints / Restrictions — List agency constraints and/or restrictions with respect to Systems Personnel.

1. The personnel do not have the skills to maintain the system.

Issues — List any issues that are related to this specific componenet. If the issue is global to the system, then is only needs to be stated once.

Recommended Improvements / Planned Changes

List any system or component recommended improvement that the contact person discusses. State whether the improvement is planned or a “wish” and explain why they system and component is being improved. If the improvement is global to the system, then is only needs to be stated once.

Contacts / Phone Numbers

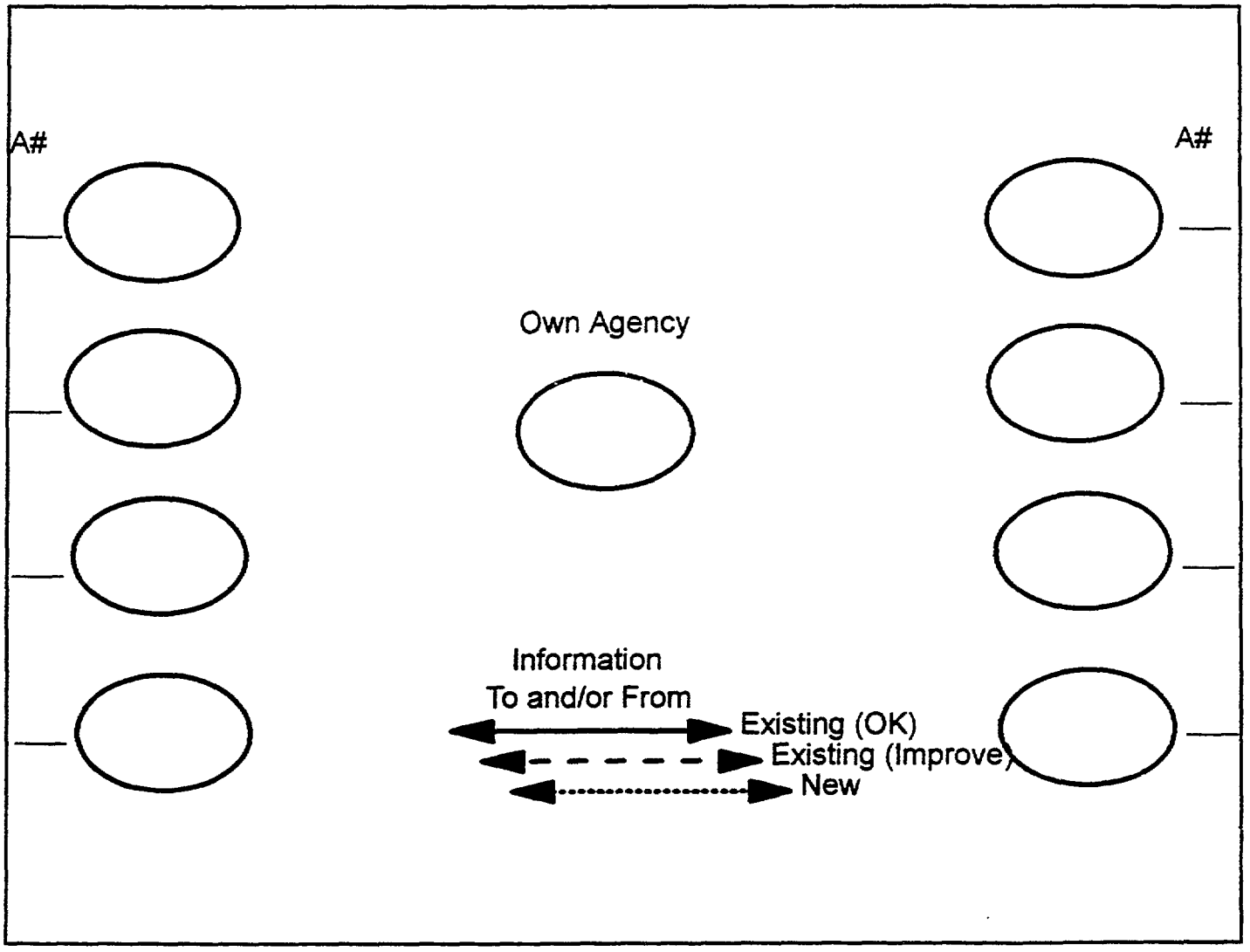
List the contact person from which you recieved this information and their phone number.

Other — List anything else that may be relevant about the system, but does not fit in the above columns.

2.0 Agency

Information about the organization which contains the system being surveyed is collected in this section. The purpose of this section is to identify any other systems or interfaces that an a agency has an established method for communicating.

Template Page #9 is a graphical view of who agencies have relationships with other agencies. For each agency surveyed, identify the external agencies by assigning an A# identifier, and placing the name of the external agency inside the oval. Indicate the type of interface between the agencies, by the legend in Template Page #7.



2.1 Agency Interfaces (Internal / External)

The purpose of Agency Interface, Template Page #1 1, is to further understand the type of relationship that is established with an external organization.

A#	[Same description as HW# in Section 1 .1]
Location	[Same description as Location in Section 1.1]
Information Content	This column is a summary of the information exchanged between the agencies. An few examples of the how to complete this item would be: Road Weather Information, Road Construction, and Incident Reporting
Interface Method	How is the information being exchanged today? Some recommended methods are presented in the following list: 1. Telephone 2. Fax 3. Mail 4. Computer Information Network a. Internet b. America Online c. CompuServe d. Prodigy e. Bulletin Board Service f. Other g. Two Way Radio h. Television 5. Radio Broadcast 6. Visual 7. Newspaper 8. Hardcopy Handouts (ie. Flyers, pamphlets)
Frequency	The frequency of information exchange shall be expressed in some type of units over a time period. 1. One time / minute 2. One time / hour 3. One time / day

4. One time / week
5. One time / month
6. One time / year
7. As needed
8. Post unplanned event (ie. traffic accident)
9. Other

Status — [Same description as Status in Section 1.1]

Policies — List agency policies that are practiced with respect to the environment. Listed below are a couple of examples that may be found in this topic.

1. Agency X only operates the System A with the System Administrator, Monday - Friday, 8AM - 5PM.

2. Educational requirements to operate System B is experience with UNIX.

Constraints / Restrictions — List agency constraints and/or restrictions with respect to Systems Personnel.

1. The personnel do not have the skills to maintain the system.

Issues — List any issues that are related to this specific componenet. If the issue is global to the system, then is only needs to be stated once.

Recommended Improvements / Planned Changes

List any system or component recommended improvement that the contact person discusses. State whether the improvement is planned or a “wish” and explain why they system and component is being improved. If the improvement is global to the system, then is only needs to be stated once.

Contacts / Phone Numbers

List the contact person from which you recieved this information and their phone number.

Other — List anything else that may be relevant about the system, but does not fit in the above columns.

2.2 Agency Systems and Programs

Template Page #13 is collecting all the systems that an agency being surveyed is using. It is intended that for each system listed, a set of templates in Section 1 is completed.

APPENDIX C

As-Is Agency Reports
System Documentation Attachments

3.1.4 MN/DOT METRO DIVISION LANE CLOSURE INFORAMTION SYSTEM

MnDOT TMC LANE CLOSURE/
CONSTRUCTION INFORMATION
Publication

WEATHER PERMITTING, THE FOLLOWING LANE CLOSURES ARE IN EFFECT:

TONIGHT...(5/3)

TH 55 EAST AND WESTBOUND FROM TH 100 TO WIRTH PRKY
ALTERNATE LANES CLOSED 11 PM TO 9 AM (SAT)

TH 169 NORTH AND SOUTHBOUND RAMPS TO ROCKFORD RD
CLOSED THROUGH MD-MAY

TH 169 NORTHBOUND RAMP FROM ROCKFORD RD
CLOSED THROUGH MID-MAY

SATURDAY...(5/4)

I-94 EAST AND WESTBOUND OVER MISSISSIPPI RIVER BRIDGE
LEFT LANE CLOSED MIDNIGHT TO 5:30 AM (SUN)

SUNDAY...(5/5)

I-35W NORTH AND SOUTHBOUND AT I-494
ALTERNATE LANES AND RAMP TO EASTBOUND 494 CLOSED 10 PM TO 5 AM (MON)

I-35W NORTHBOUND RAMP TO I-494 WESTBOUND
CLOSED 10 PM TO 5 AM (MON)

TH 55 EAST AND WESTBOUND FROM lNDUSTRIAL BLVD TO MEDICINE LAKE RD
ALTERNATE LANES CLOSED 10 PM TO 5 AM(MON)

I-494 EASTBOUND RAMP TO I-35W NORTHBOUND
CLOSED 10 PM TO 5 AM (MON)

MONDAY, MAY 6 *** 9 AM TO 3 PM UNLESS SPECIFIED ***

TH 47 NORTHBOUND FROM 85TH AVE TO COON RAPIDS BLVD
RIGHTLANE CLOSED

TH 55 WESTBOUND FROM LARCH LN TO 18TH AVE
RIGHT LANE CLOSED

TH 55 WESTBOUND FROM TH 100 TO DOUGLAS DR
ALTERNATE LANES CLOSED 9 AM TO NOON

I-94 WESTBOUND FROM TH 280 TO HURON BLVD
RIGHT LANE CLOSED

I-94 EAST AND WESTBOUND OVER MISSISSIPPI RIVER BRIDGE
LEFT LANE CLOSED 11 PM TO 5:30 AM (TUE)

DOUGLAS DR NORTH AND SOUTHBOUND OVER TH 55
ALTERNATE LANES CLOSED NOON TO 3 PM

THANKS FOR YOUR COOPERATION!

MnDOT TRUCK CENTER
CONSTRUCTION INFORMAT
Publication

MINNESOTA LANE CLOSURES

WEATHER PERMITTING
TEE FOLLOWING LANE CLOSURES WILL BE IN EFFECT IN THE TWIN CITIES METRO *AREA FOR* CONSTRUCTION ON
****

WEEKEND LANE CLOSURES:

I35W NORTBBOUND AT 1494 RIGET LANE CLOSED PLUS THE RAMP FROM EASTBOUND I494 TO 135W NORTHBOUND CLOSED FROM 1000 PM FRIDAY TO 500 AM SATURDAY.

TH55 EAST AND WESTBOUND FROM TH100 TO THEODORE WIRTH PKWY ALTERNATING LANES FROM 1100 PM FRIDAY TO 900 AM SATURDAY.

TH55 EAST AND WESTBOUND FROM INSTRIAL BLVD TO MEDICINE LAKE RD ALTERNATING LANES FROM 1000 PM SUNDAY TO 600 AM MONDAY.

194 EAST AND WESTBOUND AT THE DARTMOUGH BRIDGE RESTRICTED TO SINGLE LANE EACH DIRECTION FROM 1201 AM TO 500 AM SUNDAY.

MONDAY, MAY 6, 3.996

TH13 SOUTHBOUND AT 138TH ST IN SAVAGE RIGHT LANE CLOSED FROM 900 AM TO 300 PM.

TH47 NORTHBOUND FROM 85TH AV TO COON RAPIDS BLVD RIGHT LANE CLOSED FROM 900 AM TO 300 PM.

TH55 BRIDGE OVER 55 AT DOUGLAS DRIVE ALTERNATING LANES FROM NOON TO 300 PM-

TH55 WESTBOUND FROM TH100 TO DOUGLAS DRIVE ALTERNATING LANES FROM 900 AM TO NOON.

TH55 WESTBOUND FROM LARCE LANE TO 18TH AV RIGHT LANE CLOSED FROM 900 AM TO 300 PM.

194 WESTBOUND FROM TH280 TO HURON BLVD RIGET LANE CLOSED FROM 900 AM TO 300 PM.

194 EAST AND WESTVOUND AT THE DARTMOUTH BRIDGERESTRICTED TO SINGLE LANE EACH DIRECTION FROM 1100 PM TO 530 AM.

PLEASE DRIVE SAFELY

EMAIL : CONSTRUCTION INFORMATION

From: RADIOM --MNDOT Date and time 05/06/96 13:08:34
To: DIST05 --MNDOT ROSEVILLE PERMIT 0 ATCOOO --MNDOT
CMC000 --MNDCT CLARK CATHY M. TMC000 --MNDOT TRAFFIC MGT CTR.
RXB000 --MNDOT BARNARD R. KENT

SUBJECT: CONST. BRIDGE 494 OVER 35W
Maintenance Lane Closure Information
Subject: CONST. BRIDGE 494 OVER 35W
DATE Received 5/6/96 Time Received: 11:56
Information Received By: H.B.-
Information Received From: OLSON, 7103- M- 779-6196
Day and Date(s) of Lane Closure: TUE.5/7/96 TO WED. 5/8/96
Truck Highway Location: 35W AND 494

Complete Lane Closure Description:-LEFT LANE, TH. 494 NB.
LEFT LANE, TH. 494_NB.

Time of Closure: 08:00 PM TO 5:00 PM
Transportation Permit Restrictions: NONE

METRO DISPATCH CENTER

Mn/DOT Traffic Mgt Ctr Fax **:512-349-2505**

Mn DOT T.M.C. LANE CLOSURE
INFORMATION DISTRIBUTION LIST

** Speed-Dial Directory **

P.1 Mar 17 ● 9S 7:32

No.	Remote Location	Telephone Number	Group Number
001	KSTP/KS95 Radio	9!224-3563	3 7 -
~~002~~	~~WCCO Helicopter~~	~~9!537-4217~~	~~3, 4~~ DELETED 4-19
003	Metro Traffic	9!332-8362	3, 4
004	WCCO-AM Radio	9!370-0410	3, 4
005	WIMN Radio	9!439-5015	3, 4
006	KBEM Radio	9!627-3106	3
007	M.S.N.	9!935-1452	4
008	KSTP-TV	9!642-4409	3, 4
009	WCCO-TV	9!330-2767	3, 4
010	STRIB	9!673-4359	4
011	Pioneer Press	9!228-5500	4
012	M.T.C.	9!349-7316	3, 4
~~013~~	~~WCCORADIO~~	~~9!7214067~~	~~3~~ DELeted 4-19
014	METRODOME→TWINS	9!375-7480	~~3~~ 3 4-19
152	W.E. Metro PACS	9!582-1368	3, 4

3.1.5 MN/DOT METRO DIVISION CONSTRUCTION INFORMATION SYSTEM

HOT SPOTS

THE METRO's WEEKLY CONSTRUCTION UPDATE

MAY 13, 1996

HIGHWAY 3 (SOUTH)

NEW!

Between Highway 47 in Northfield and one mile north of Farmington: Traffic is restricted to a single lane controlled by a flagger during daytime hours, Monday through Saturday. Anticipated completion date: late June. Project Engineer: Charles Graf, 297-4580. Public Affairs Coordinator: Kent Barnard, 582-l 363.

HIGHWAY 5

Between Highway 284 and County Road 10 in Waconia: Intermittent lane restrictions in both directions. Anticipated completion date: late May. Project Engineer: Mark Panek, 341-7427. Public Affairs Coordinator: AeDee Latten II, 582-l 549.

HiGHWAY 10(NORTH)

On Foley Boulevard between 99th Avenue N.W. and 102nd Lane N.W.: Foley Boulevard over Highway 10 in Coon Rapids is being widened and turn lanes added to the intersection. Noise walls will be constructed on the nbrth side of the roadway from the railroad tracks to just west of Foley Boulevard and on the north and south sides of the roadway between Foley Boulevard and Highway 610. Traffic signals will be installed on both ends of the bridge. The Foley Boulevard bridge is CLOSED during this reconstruction. Anticipated completion date: Reconstruction-October, 1996; Noise Walls-July, 1997. Project Engineer: Nancy Sannes, 797-3068. Public Affairs Coordinator: Judy Jacobs, 582-l 365.

NOTE: Foley Boulevard between 101st Avenue and 102nd Lane will be open to local traffic only. The ramp from Foley Boulevard to westbound Highway 10 is closed. The loop from westbound Highway 10 to Foley Boulevard will remain open, however, Foley Boulevard traffic will be detoured up University Avenue to Northdale Boulevard.

Minnesota Department of Transportation

Metropolitan Division
1500 W. County Road B2
Roseville. MN 55113-3105
612-582-l 000

COUNTY ROAD 18 (SOUTHWEST)

From l-494 and 108th Street in Bloomington: Beginning Monday, May 20, Highwood Drive will be closed at County Road 18 (Town Line Road) in Bloomington until late July. Use west Bush Lake Road and l-494 frontage roads to access Highwood Drive and Highway 169. Bloomington Ferry Road is closed at County Road 18. Detour via Ensign Avenue. Occasional non-rush hour lane closures on County Road 18 for equipment movement. By mid-summer, north and southbound County Road 18 traffic will be shifted to the new, northbound lanes and construction will begin on the southbound lanes. Anticipated completion date: Fall, 1996. Project Engineer: Tom Ravn, 341-7427. Public Affairs Coordinator: AeDee Latten II, 582-l 549.

From County Road 16 to old Highway 101: This portion of County Road 18 is closed. Detour via County Road 16 to Highway 13 to access Highway 101. Anticipated completion date: mid-June. Project Engineer: Mark Panek, 341-7427. Public Affairs Coordinator: AeDee Latten II, 582-l 549.

INTERSTATE 35 (SOUTH)

Between the south junction of I-35W/I-35E in Burnsville and Highway 50 in Lakeville: Traffic is restricted to two lanes in each direction on the southbound side of the interstate during reconstruction of the northbound lanes. Following completion of the northbound lanes in late June, traffic will be switched to two lanes in each direction on the northbound side of the interstate. Anticipated completion date: Fall; 1996. Project Engineer: Vicki Barron, 297-4580. Public Affairs Coordinator: Kent Barnard, 582-l 363.

INTERSTATE 35E (NORTH)

80th Street bridge over the interstate at Lino Lakes: The 80th Street bridge is closed during resurfacing. Traffic detour on 20th Ave. North, Frenchman Rd. and Hwy. 61. I-35E traffic also may encounter non-rush hour lane closures. Anticipated completion date: early June. Project Engineer: Mike Leegard, 779-5038. Public Affairs Coordinator: Kent Barnard, 582-l 363.

INTERSTATE 35W (NORTH)

At Lake Drive in Blaine: Reconstruction of the Lake Drive (County Road 23) bridge over the interstate. THE LAKE DRIVE BRIDGE WILL CLOSE MAY 15. Traffic will detour on Naples Street and 85th Street/Anoka County Road J. Anticipated completion date: Fall, 1996. Project Engineer: Mike Leegard, 779-5038. Public Affairs Coordinator: Kent Barnard, 582-1363.

PROJECTS MAY BE DELAYED DUE TO INCLEMENT WEATHER

INTERSTATE 35W (NORTH)

Anoka County Road 14 bridge over I-35W in Lino Lakes: Traffic is restricted to a single lane across the interstate, controlled by a portable traffic signal during bridge resurfacing. I-35W traffic also may experience occasional non-rush hour restrictions, Anticipated completion date: early June. Project Engineer: Paul Juckel, 779-5037. Public Affairs Coordinator: Kent Barnard, 582-l 363.

INTERSTATE 35W (SOUTH)

26th and 28th Streets over I-35W in Minneapolis: 26th Street over I-35W is reduced to one westbound lane and 28th Street over I-35W is reduced to one eastbound lane. Anticipated completion date: early August, 1996. Project Engineer: Fred Starke, 797-3071. Public Affairs Coordinator: AeDee Latten II, 582-l 549.

From l-94 to 46th Street in Minneapolis: North and southbound I-35W is reduced to three lanes in each direction. The MCTO bus stops on north and southbound I-35W at Lake Street are closed. Use local routes. Anticipated completed date: November, 1996. Southbound Highway 65 (exit from downtown Minneapolis to I-35W) is restricted to a single lane. Anticipated completion date: October. Project Engineer: Dan Penn, 797-3072. Public Affairs Coordinator: AeDee Latten II, 582-1549.

Diamond Lake Road over I-35W in Minneapoiis: Reduced to one lane in each direction. Anticipated completion date: early June. Project Engineer: Fred Starke, 797-3071. Public Affairs Coordinator: AeDee Latten II, 582-1549.

I-35W over Minnehaha Creek in Minneapolis: Northbound I-35W traffic is on the new, center portion of the bridge over Minnehaha Creek until mid-summer. Three lanes of traffic will be maintained, but some delays are expected. Minnehaha Parkway under I-35W will be closed intermittently until late June. Project Engineer: Fred Starke, 797-3071. Public Affairs Coordinator: AeDee Latten II, 582-1549.

76th Street over I-35W in Richfield: Reduced to one lane in each direction. Anticipated completion date: late May. Project Engineer: Fred Starke, 797-3071. The access from 76th Street to northbound I-35W is also closed. Anticipated completion date: mid-June. City of Richfield contact: Tom Foley, 861-9700. Public Affairs Coordinator: AeDee Latten II, 582-1549.

-MORE-

INTERSTATE 35W (SOUTH) Continued

I-494 over I-35W in Richfield/Bloomington: Eastbound I-494 is now on a new, temporary bridge just south of existing I-494. Three lanes of traffic will be maintained on eastbound I-494 during peak periods, but lanes will narrow and some delays are expected. Project Engineer: Fred Starke, 797-3071. Public Affairs Coordinator: AeDee Latten II, 582-I 549.

90th Street over I-35W in Bloomington: 90th Street is reduced to one lane in each direction. Evening and weekend single lane closures on both directions of I-35W. Anticipated completion date: late June. Project Engineer: Fred Starke, 797-3071. Public Affairs Coordinator: AeDee Latten II, 582-I 549.

HIGHWAY 36/EDGERTON STREET BRIDGE (EAST)

Edgerton Street bridge over Highway 36 in Little Canada: Bridge is being rebuilt half at a time. Traffic restricted to one lane in each direction. Anticipated completion date: early June, 1996. Project Engineer: Joel Williams, 779-5048. Public Affairs Coordinator: Kent Barnard, 582-I363.

HIGHWAY 36/INTERSTATE 35E (EAST)

in Little Canada: Construction of an H.O.V. ramp meter bypass lane from westbound Hwy. 36 to southbound interstate 35E is underway. Ramp exit speed is 20 miles per hour. Anticipated completion date: late June. Project Engineer: Paul Juckel, 779-5037. Public Affairs Coordinator: Kent Barnard, 582-I 363.

HIGHWAY 52155 (SOUTHEAST)

At the old Concord Blvd. in Inver Grove Heights: Concrete pavement repairs will require single lane traffic in each direction. Anticipated completion date: before the Memorial Day weekend. Project Engineer: Paul Juckel, 779-5037. Public Affairs Coordinator: Kent Barnard, 582-I 363.

HIGHWAY 55 (SOUTHEAST)

Between Argenta Trail (County Road 631 and Courthouse Blvd. in Inver Grove Heights: Motorists should watch for lane closures and single lane traffic from dawn until dusk for cleanup and landscaping. Anticipated completion date: late May. Project Engineer: Liz Benjamin, 297-4580. Public Affairs Coordinator: Kent Barnard, 582-1363.

SAFE AND SMART, DO YOUR PART
WORK ZONE SAFETY IS EVERYONE'S RESPONSIBILITY

HIGHWAY 52 LAFAYETTE FREEWAY BRIDGE INSPECTION

Over the Mississippi River in downtown St. Paul: Inspection/repair of the Lafayette bridge continues. The southbound right lane will be closed from 9 a.m. until 3 p.m. Monday and Tuesday. The right lane of the northbound bridge will be closed from 9 a.m. to 3 p.m. on Wednesday and Thursday. Width restriction at 12 feet. Anticipated completion date: mid-May. Public Affairs Coordinator: Kent Barnard, 582-1363.

HIGHWAY 55/HIAWATHA AVENUE (SOUTH)

From l-94 to East 32nd Street in Minneapolis: Occasional non-rush hour lane closures on Hiawatha Avenue for utility work. Accesses from northbound Hiawatha and Cedar Avenue to westbound l-94 are re-routed. Occasional lane restrictions on city streets under or adjacent to Hiawatha Avenue. Anticipated completion date: November, 1996. Lake Street is reduced to one lane in each direction. Lake Street motorists will not be able to turn left onto Hiawatha Avenue. Westbound Lake Street motorists use Snelling and 32nd Street to access southbound Hiawatha Avenue. Eastbound Lake Street motorists use 21st Avenue South to East 28th Street to access northbound Hiawatha Avenue. Trucks going southbound on Hiawatha Avenue will not be able to turn right to go west on Lake Street. Trucks can use East 28th Street and Cedar Avenue to go west on Lake Street. Anticipated completion date: early June. Project Engineer: Joel Williams, 779-5048. Public Affairs Coordinator: AeDee Latten II, 582-1549.

HIGHWAY 55/OLSON MEMORIAL HIGHWAY (WEST)

From the city limits of Minneapolis to Industrial Boulevard in Plymouth: Mill and bituminous overlay on this portion of the roadway. Ten new signal systems will also be installed or upgraded. Motorists should watch for non-rush hour lane closures; night and occasional week-end work. Anticipated completion date: mid-September, 1996. Project Supervisor: Fred Starke, 797-3071. Public Affairs Coordinator; Judy Jacobs, 582-l 365.

HIGHWAY 62/CROSSTOWN (SOUTH)

From Highway 77 (Cedar Avenue) to 28th Avenue in Minneapolis: Traffic will be reduced to one lane in each direction from 8 p.m. to 5:30 a.m. nightly from Sunday evening through Friday morning. Daytime lane closures from 9 a.m. to 3 p.m. and possible Saturday work from sunrise to 11 a.m. Anticipated completion date: mid-May. Project Engineer: Charles Graf, 297-4580.Public Affairs Coordinator: AeDee Latten II, 582-l 549.

-MORE-

OLD HIGHWAY 65/ISANTI COUNTY ROAD 30 (NORTHWEST)

From 24th Ave. to 313th Lane in Cambridge: Traffic is detoured during construction of a new bridge over the Burlington Northern Railroad tracks at the south end of town. Only local residents may use the road during construction. Anticipated completion date: early July. Project Engineer: Nancy Sannes, 797-3068. Public Affairs Coordinator: Kent Barnard, 582-l 363.

INTERSTATE 94 (SOUTHEAST)

Between Highway 280 in St. Paul and Cedar Avenue in Minneapolis: Reconstruction of the l-94 Mississippi River Crossing (Dartmouth Bridge). l-94 mainline traffic is restricted to two lanes in each direction from Highway 280 in St. Paul to Riverside Avenue in Minneapolis. Anticipated completion date: late August, 1996. Project Engineers: Dave Reinsch, 779-5013, Liz Benjamin, 297-4580. Public Affairs Coordinator; Judy Jacobs, 582-l 365.
NOTE: FOR CONSTRUCTION UPDATES CALL THE l-94 HOTLINE AT 582-1539

HIGHWAY 95 (NORTHEAST)

From l-35 in North Branch to Highway 8 in Tavlors Falls: Preliminary resurfacing work begins today. Minor impacts to traffic until mid-June. Anticipated completion date: mid-August. Project Engineer: Mike Leegard, 799-5038. Public Affairs Coordinator; Judy Jacobs, 582-l 365.

HIGHWAY 101/SHAKOPEE BYPASS (SOUTHWEST)

From Highway 169 to current Highway 101 in Scott County (Shakopee Bypass): Highway 169 between Highway 41 and Highway 300 in Scott County is reduced to one lane in each direction. Residents in the Trailer Parks west of Highway 169 are not able to make left turns onto Highway 169. Use the frontage road north of Highway 41 to access Highway 169. County Road 69 is closed between Highway 169 and County Road 78. County Road 78 and Highway 169 are the designated detours during this closure. Work on the new Highway 101 (Shakopee Bypass) will not affect traffic. Anticipated completion date: late Fall, 1996. Project Engineer: Mark Panek, 341-7427. Public Affairs: AeDee Latten II, 582-1549.

FOR UP-TO-THE-MINUTE TRAFFIC REPORTS

TUNE TO TRAFFIC RADIO

KBEM 88.5 FM

HIGHWAY 101 (NORTHWEST)

From I-94 to the Crow River in Hassan Township, Hennepin County: Constructing two additional lanes **to** Highway 101 and widening of the bridge over i-94. Realignment of County Road 49 on the east, construction of County Road 49 on the west. Extension of Northdale Boulevard and construction of signal systems. Traffic will be maintained on Highway 101; by-pass and detours of local streets. Anticipated completion date: November 1, 1996 for southbound Highway 101. Final completion date: June, 1997. Project Supervisor: Wayne Hillstrom, 797-3069. Public Affairs Coordinator: Judy Jacobs, 582-l 365.

From the Crow River in Frankfort Township (Wright County) to CSAH 42 in Otsego: Construct two additional lanes on Highway 101, extend Quam Avenue North and intersection reconstruction at CSAH 36 and CSAH 37, signal system at CSAH 36 and noise wall. Traffic to be maintained on Highway 101; by-pass and detours of local streets. Anticipated completion date: November 1, 1996 for southbound Highway 101. Final completion: June, 1997. Project Supervisor: Wayne Hillstrom, 797-3069. Public Affairs Coordinator: Judy Jacobs, 582-1365.

HIGHWAY 169 (NORTHWEST)

93rd to Hayden Lake Road: Constructing Osseo bypass, adding two lanes. Project began in August, 1994. **Motorists** should watch for non-rush hour lane closures. **Anticipated completion date: June, 1996. Project** Supervisor: Wayne Hillstrom, 797-3069. Public Affairs Coordinator: Judy Jacobs, 582-1365.

At Medicine Lake Road (County Road 70) in Plymouth/New Hope/Golden Valley and Rockford Road (County Road 91 in Crystal/New Hope: The Medicine Lake Road and **Rockford Road bridges over Highway 169 are reduced to one lane** in **each direction. Loops at** Rockford Rd. to southbound Hwy. 169 are open and others closed. Anticipated completion date: May 22. The 63rd Ave. N. bridge over Hwy. 169 is closed. Access to and from Hwy. 169 will remain open. Anticipated completion date: late May. Project engineer: Kevin Kosobud, 797-3070. Public Affairs Coordinator: AeDee Latten II, 582-l 549.

At I-94 in Maple Grove/Brooklyn Park: There will be intermittent lane restrictions on north and southbound Highway 169. Anticipated completion date: mid-June. Project Engineer: Kevin Kosobud, 797-3070. Public Affairs Coordinator: AeDee Latten II, 582-1549.

HIGHWAY 169 (NORTHWEST) Continued

I-94 in Maple Grove/Brooklyn Park to I-394 in St. Louis Park: Non-rush hour and evening lane restrictions. Anticipated completion date: late June. Project Engineer: Dan Penn, 797-3072. Public Affairs Coordinator: AeDee Latten II, 582-l 549.

HIGHWAY 169 (SOUTHWEST)

At the Highway 101 (Shakopee Bypass) junction: Highway 169 between Hwy. 41 and Hwy. 300 in Scott County is one lane in each direction. Residents in the trailer parks west of Highway 169 are not able to make left turns onto Highway 169. Use the frontage road north of Highway 41 to access Highway 169. Anticipated completion date: Fall, 1996. Project Engineer: Mark Panek, 341-7427. Public Affairs Coordinator: AeDee Latten II, 582-l 549.

NEW HIGHWAY 212

Technology Drive from Prairie Center Drive to Purgatory Creek: Closed. Use Mitchell Road to access Technology Drive businesses. Anticipated completion date: mid-July. Project Engineer: Dan Penn, 797-3072. Public Affairs Coordinator: AeDee Latten Ii, 582-l 549.

Yellow Brick Road to State Street in Chaska: Beginning Wednesday, May 15, the right lane of eastbound Highway 212 will be closed in some areas of the project. This will not affect vehicles turning left to access local streets and businesses. Anticipated completion date: late June. Project Engineer: Curt Turgeon, 341-7427. Public Affairs Coordinator: AeDee Latten II, 582-l 549.

WABASHA STREET BRIDGE (EAST)

Over the Mississippi River in downtown St. Paul: The old bridge is CLOSED to motorized and pedestrian traffic. Traffic is routed to the Robert Street bridge. Construction of the new bridge is expected to begin in June. Anticipated completion: mid-July, 1998. St. Paul Public Works Project Engineer: Kevin Nelson, 266-6182. St. Paul Public Affairs: Joanne Plankers, 266-6147. Mn/DOT Public Affairs Coordinator: Kent Barnard, 582-l 363.

DAYTONPORT REST AREA (NORTH)

Off Highway 10,6 miles northwest of Anoka: Constructing building. Picnic shelters will be repaired. Rest area may be closed from time to time; rest rooms will remain open. Anticipated completion date: early September, 1996. Project Engineer: Nancy Sannes, 797-3068. Public Affairs Coordinator: Judy Jacobs, 582-l 365.

Minnesota Department of Transportation

News Release

Metro Division
1500 Country Rd B2 West
Roseville MN 55113

Phone 612 582-1000

April 11, 1996

FOR IMMEDIATE RELEASE

CONTACT: Lucy Kender
Communications Director
(612) 582-1362
TOLL FREE (800) 657-3688
TDD/TTY (612) 296-9930

MINNESOTA DEPARTMENT OF TRANSPORTATION ANNOUNCES 1996 METROPOLITAN AREA CONSTRUC TION PROJECTS

(Roseville, Minn.) The Minnesota Department of Transportation's (Mn/DOT) Metropolitan Division announced its 1996 Twin City metropolitan area construction program today. The program includes 36 new projects and 13 projects which are continuations of those begun in previous years. The new projects total $72,380,000

Additionally, several *Team Transit initiatives will be constructed* this year, Team Transit is a Mn/DOT and Metropolitan Council Transit Operations (MCTO) partnership which encourages transit use and efficient use of existing highway capacity. Several bus-only shoulder lanes and ramp meter bypasses for High Occupancy Vehicles (HOV) will be added at various locations throughout the metro area. (See attached listing for the locations of these projects.)

Traffic impacts vary with construction projects, but those with major impacts or detours include: (Please refer to numbers on the attached map and listing)

#5 I-35W from downtown Minneapolis to BurnsvilIe: Until early November. Single and double lane restrictions on a continual basis at various times and locations north of 46th Street, Night and weekend lane restrictions and road closures from Minneapolis to Burnsville throughout the summer, During closures, traffic will be rerouted up and down ramps at affected

(more)

interchanges. Bridges over I-35W will be CLOSED or restricted on an alternating basis, Call the I-35W HOTLINE at (612) 582-1493 for current updates.

#35: I-494 from I-94 to the Wakota Bridge. Concrete and bridge repairs July 8 to early September. One lane in each direction. Ramp and loop closures along the interstate as the work moves past.

#38: I-94 Mississippi River Crossing Reconstruction (Dartmouth Bridge), Between Highway 280 in St, Paul and Cedar Avenue in Minneapolis, I-94 mainline traffic will be restricted to two lanes in each direction until late August, 1996. Project began in April of, 1995. For construction updates call the I-94 HOTLINE at (612) 582-1539,

#42: Interstate 94 from Highway 95 to Highway 120. Concrete repairs start July 8 and go to mid-September. Work will start on the west lanes then switch to the east lanes. Watch for traffic **restrictions** and ramp detours.

#45 **Highway 10 and Foley Boulevard** in Coon **Rapids.** Work has begun to widen Foley Boulevard and add turn lanes, noise walls and traffic signals, Foley Boulevard bridge is CLOSED during reconstruction. Motorists should watch for lane and ramp restrictions and signed detours, Reconstruction is scheduled to be completed by early October, 1996. Noise wall **work** will be completed by **July, 1997.**

Public information regarding construction zones, lane closures, detours and other information is a vitai part of the Mn/DOT construction program HOTLINE phone numbers are

(more)

available regarding two projects. For information about the Interstate 94 project near the University of Minnesota, the HOTLINE number is (612) 582-1539: for information regarding Interstate 35W south of downtown Minneapolis, call (612) 582-1493. The.HOTLINES play pre-recorded messages available 24 hours per day and allow callers to leave their names and numbers if they need more information. (TDD/TTY users may access this information by calling (612) 296-9930 or toll free (800) 657-3994,)

Mn/DOT thanks motorists for their patience during these construction projects and also reminds them to drive with caution and allow additional time to reach their destinations,

REMEMBER: Fines Double in Work Zones!

Safe and Smart – Do Your Part

Work Zone Safety is Everyone's Responsibility!

#####

ROADWAY	DESCRIPTION	PROJECT DATES	COST	IMPACTS	MAP #
Highway 101	I-94 to Wright County Road 42, surface two lanes and widen bridge	4/15/96-11/1/96	$10,750,000	Non-rush hour delays, bypasses, detours of local roads	1
Interstate 94	At Highway 169 interchange, replace bridge and widen ramps	5/6/96 7/ l/97	$2,500,000	Non-rush hour lane cIosures, also nights and weekends	2
Highway 169	Bridge resurfacing at Medicine Lake Road, 36th Avenue, Rockford Road and 63rd Avenue	4/15/96 - 7/l 2/96	$423,000	Single lane bridges, occasional ramp closings	3
Highway 55	I-494 to Minneapolis, resurfacing signal revision	4/15/96-9/13/96	$3,100,000	Non-rush hour lane closures, some nights/weekends	4
Interstate 35 W	Bridge repair on ten bridges over I-35 W from 26th Street in Minneapolis to 94th Street in Bloomington	3/30/96-1l/3/96	$3,450,000	Major delays on cross-streets, delays on I-35 W nights and weekends	5
Highway 169	Install traffic management system, from I-394 to I-94	8/l/95-5/24/96	$1,690,000	Non-rush hour lane closures	6
Interstate 35	County Road 50 to junction of I-35E/I-35 W, reconstruct roadway, remove weigh station	9/6/95-10/5/96	$7,600,000	Two lanes each direction on side of roadway not under construction	7
Highway 169	Replace bridge deck and approaches over Mississippi River in Anoka	1l/l/96-1l/1/97	$6,800,000	Non-rush hour lane closures	8
Highway 52	South junction with Highway 55 to Concord Street interchange, concrete repair, bridge repairs	7/24/95-6/15/96	$1,350,000	One lane each direction open	9
Highway 61	On Mounds Blvd from I-94 to Highway 5, resurfacing	5/1/96-8/15/96	$ 170,000	Non-Rush hour lane closures	10
Highway 10	On Mighway 10/I-694 to County Road H; Highway 51 (Snelling Ave),Highway 36 to County Road F, concrete repairs	5/28/96-8/l0/96	$1,500,000	One lane each direction open	I1

ROADWAY	DESCRIPTION	PROJECT DATES	COST	IMPACTS	MAP #
Interstate 35W	Bridge repairs over Ramsey County Road I, under County Roads E-2 and 96	7/5/96-8/10/96	$850,000	County Road E-Z closed, lane closures	12
Interstate 35W	Replace and widen bridge deck at Lake Drive; construct ramp meter bypass	4/l/96-9/1/96	$1,400,000	Lake Drive detoured, non-rush hour closures on I-35 W	13
Highway 95	l-35 to Highway 8 in Taylors Falls, resurfacing	5/15/96-8/15/96	$1,475,000	One lane traffic with flagger or pilot car	14
interstate 94	Bridge repairs under Prior Avenue	S/5/96-9/15/96	$120,000	Prior Ave detoured, non-rush hour lane closures on 1-94	15
Interstate 35E	Bridge resurfacing, 80th St., County Roads J and H-2 and Edgerton Street	7/5/96-8/15/96	$315,000	Non-rush hour lane closures on I-35 E, cross streets closed over interstate	16
Interstate 35E	Construct high-occupancy vehicle (HOV) ramp meter bypass lane from westbound Highway 36 to southbound I-35E	5/1/96 7/1/96	$175,000	Lane closures, loop closure in evenings	17
Interstate 35W	Resurfacing County Roads 14 and 21 bridges over I-35w	5/l/96-7/1/96	$187,000	One lane on County Roads 14; 21 closed; non-rush hour closures on I-35w	18
Highway 36	Repairs on bridges under Arcade, Edgerton, Victoria Streets and Hamline Avenue	4/29/96-8/l /96	$378,000	Detours and restrictions	19
Highway 5	Highway 4 1 to 25, resurfacing, signal and turn lanes	7/8/96-9/27/96	$1,500,000	Non-rush hour lane closures	20
Highway 55	East 28th Street to East 32nd Street, construct bypass, grading, bridges, retaining walls	4/8/96-8/30/97	$12,000,000	Non-rush hour lane closures, restriction on Lake Street and 28th Street	21
Highway 169	Eden Prairie Road to County Road 4, widen roadway and paint turn lanes	8/1/96 9/30/96	$400,000	Non-rush hour lane closures, possible major delays	22

ROADWAY	DESCRIPTION	PROJECT DATES	COST	IMPACT	MAP#
Highway 41	Highway 212 in Chaska, signal revisions and turn lanes	7/10/96-8/30/96	$100,000	Non-rush hour lane closures	23
Highway 55	I-94 to 24th Street in Minneapolis, construct northbound Highway 55 roadway and bridges at East 24th Street, Cedar and Franklin Avenues	7/10/95-8/10/96	$3,700,000	Non-rush hour lane closures on Highway 55, lane restrictions under bridges	24
Highway 212	At Highway 101 in Chanhassen, signal installation and turn lane construction	8/5/96-10/15/96	$500,000	Non-rush hour lane closures	25
Interstate 35W	Bridge repair on Highway 13 over I-35W, construct high-occupancy vehicle (HOV) ramp meter bypass	5/1/96	$950,000	One lane each direction on Highway 13, lane closures on I-35W	26
Highway 62	Highway 77 to 28th Avenue, resurfacing	5/13/96-5/31/96	$275,000	One lane each direction evenings	28
Highway 169	93rd to Hayden Lake Road, construct Osseo Bypass, construct two additional lanes	8/8/94- 6/1/96	$5,275,000	One lane each direction 4/15 - 6/1	29
Interstate 694	Resurface bridges on 5th Avenue NW and Highway 51	4/15/96 - 6/24/96	$250,000	Bridges closed and detoured	30
Highway 212	Tech Drive from Prairie Center Drive to 1/2 mile west of interchange, construct frontage road	7/10/95-7/13/96	#3,570,000	Minimal - new frontage road	31
Highway 3	Highway 47 to one mile north of Farmington, resurfacing, culvert construction	5/13/96-7/31/96	$1,320,000	One lane alternating traffic controlled by flagger	32
Interstate 35	Dakota County Raod 70, redeck bridge over freeway	8/14/95-6/20/96	$426,000	Traffic restricted to one lane across bridge controlled by temp signal	33

ROADWAY	DESCRIPTION	PROJECT DATES	COST	IMPACT	MAP#
Interstate 35W	Bridge repair, resurfacing Minnehaha Creek to E-94 in Mineapolis	4/15/95-11/15/96	$10,176,000	Three lanes of traffic in each direction maintained, some non-rush hour lane restrictions, major impacts	14
Interstate 494	I-94 to Mississippi River Bridge (Wakota), concrete and bridge repair, shoulder replacement	7/5/96- 10/1/96	$2,900,000	One lane each direction, ramp and loop closures along the interstate as work moves past	35
Highway 67	At Beam Avenue in Maplewood, signal revision, double left turn lane on southbound Highway 61	6/10/96-7/30/96	$188,000	Beam Avenue and Highway 61 detoured for 10 days	36
Interstate 494	At I-494/I-35W interchange, traffic shifts to temporary bridge; redeck bridges	9/11/95-9/13/96	$2,200,000	Non-rush hour lane, ramp closures, mostly nights and weekends	37
Interstate 94	Highway 280 in St. Paul to Cedar Ave. in Minneapolis, widen and replace bridge over the Mississippi River (Dartmouth); rebuild U of M interchange	10/3/94-8/21/96	$28,000,000	One of three lanes in each direction closed	38
Highway 101	Old Highway 101 to Highway 169, (Shakopee Bypass)	4/3/95-11/22/96	$33,000,000	Minimal - new roadway	39
Highway 212	East of Walnut through Carver County Road 17, construct left turn lane	5/15/96-7/15/96	$450,000	None-rush hour lane closures	40
Interstate 694	Bridge repairs at 4th Street, Stillwater Road, 40th Street	6/13/96- 9/1/96	$204,000	Local traffic detoured	41
Interstate 94	Highway 120 to Highway 95, concrete repair	7/8/96-10/15/96	$2,000,000	Two lanes open each direction	42
Interstate 35	At Dakota County Road 46 (162nd St.,) build new interchange	7/15/95-11/30/96	$10,000,000	Minimal- some non-rush hour lane closures	43

ROADWAY	DESCRIPTION	PROJECT DATES	COST	IMPACT	MAP #
Highway 41	Highway 212 in Chaska, signal revisions and turn lanes	7/10/96 - 8/30/96	$100,000	Non-rush hour lane closures	23
Highway 55	I-94 to 24th Street in Minneapolis, construct northbound Highway 55 roadway and bridges at East 24th Street, Cedar and Franklin Avenues	7/10/95 - 8/10/96	$3,700,000	Non-rush hour lane closures on Highway 55, lane restrictions under brides	24
Highway 212	At Highway 101 n Chanhassen, signal installation and turn lane construction	8/5/96 - 10/11/96	$500,000	Non-rush hour lane closures	25
Interstate 35W	Bridge repair on Highway 13 over I-35W, construct high-occupancy vehicle (HOV) ramp meter bypass	5/1/96 - 11/1/96	$950,000	One lane each direction on Highway 13, lane closure on I-35W	26
Highway 62	Highway 77 to 28th Avenue, resurfacing	5/13/96- 5/31/96	$275,000	One lane each direction, evenings	28
Highway 169	93rd to Hayden Lane Road, construct Osseo Bypass, construct tow additional lanes	8/8/94 - 6/1/96	$5,275,000	One lane each direction 4/15 - 6/1	29
Highway 694	Resurface bridges on 5th Avenue NW and Highway 51	4/15/96 - 6/24/96	$250,000	Bridges closed and detoured	30
Highway 212	Tech Drive from Prairie Center Drive to 1/2 mile west of interchange construct frontage road	7/10/95 - 7/13/96	$3,570,000	Minimal - new frontage road	31
Highway 3	Highway 47 to one mile north of Farmington, resurfacing, culvert construction	5/13/96 - 7/31/96	$1,320,000	One lane alternating traffic controlled by flagger	32
Interstate 35	Dakota County Raod 70, redeck bridge over freeway	8/14/95 - 6/20/96	$426,000	Traffic restricted to one lane across bridge controlled by temp signal	33

ROADWAY	DESCRIPTION	PROJECT DATES	COST	IMPACT	MAP #
Interstate 35W	Bridge repair, resurfacing Minnehaha Creek to I-94 in Minneapolis	4/15/95 - 11/1/96	$10,176,000	Three lanes of traffic in each direction maintained, some non-rush hour lane restrictions, major impacts	34
Interstate 494	I-94 to Mississippi River Bridge (Wakota), concrete and bridge repair, shoulder replacement	7/5/96 - 10/1/96	$2,900,000	One lane each direction, ramp and loop closures along the interstate as work moves past	35
Highway 61	At Beam Avenue in Maplewood, signal revision, double left turn lane on southbound Highway 61	6/10/96 - 7/30/96	$188,000	Beam Avenue and Highway 61 detoured for 10 days	36
Interstate 494	At I-494/I-35W interchange, traffic shifts to temporary bridge; redeck bridges	9/11/95 - 9/13/96	$2,200,000	Non-rush hour lane, ramp closures, mostly nights and weekends	37
Interstate 94	Highway 280 in St. paul to Cedar Ave, in Minneapolis, widen and replace bridge over the Mississippi River (Dartmouth); rebuild U of M interchange	10/3/94 - 8/24/96	$28,000,000	One of three lanes in each direction closed	38
Highway 101	Old Highway 101 to Highway 169, (Shakopee Bypass)	4/3/95 - 11/22/96	$33,000,000	Minimal - new roadway	39
Highway 212	East of Walnut through Carver County Road 17, construct left turn lane	5/15/96 - 7/15/96	$450,000	Non-rush hour lane closures	40
Interstate 696	Bridge repairs at 4th Street, Stillwater Road, 40th street	6/3/96 - 9/1/96	$204,000	Local traffic detoured	41
Interstate 94	Highway 120 to Highway 95, concrete repair	7/8/96 - 10/15/96	$2,000,000	Two lanes open each direction	42
Interstate 35	At Dakota County Road 46 (162nd St.), build new interchange	7/15/95 - 11/30/96	$10,000,000	Minimal some non-rush hour lane closures	43

ROADWAY	DESCRIPTION	PROJECT DATES	COST	IMPACT	MAP #
Highway 10	Reconstruct Foley Blvd interchange; add noise walls	4/1/96 - 10/4/96	$8,100,000	Bridge CLOSED 4/1 - 10/4	45
Highway 10	Foley Blvd ramp over southbound Anoka County Road 47, construct bridge, approaches, retaining walls	7/8/96 - 11/1/97	$3,300,000	Non-rush hour lane closures	46
Interstate 494	East Bush Lake Road to 34th Avenue, signal revisions, traffic management	7/8/96 - 11/1/96	$1,400,000	Non-rush hour lane dlosures	48
Hennepin County Road 18	From Old Shakopee Road to I-494, work on new and existing roadway and intersctions	11/1/91 - 8/15/96	$93,000,000	Occasional lane restrictions on County Road 18 and cross streets	49
Highway 52	South junction of Highway 55 in Pine Bend to Highway 50 in Farmington, resurfacing	7/8/96 - 9/30/96	$2,800,000	Non-rush hour lane closures	50

Please note: There are no projects numbered 27, 44, 47

Team Transit Project Locations

Bus-only Shoulder Lanes

* Highway 36 from I-35W to I-3SE in Roseville; and westbound from Highway 61 in Maplewood to l-35W in Roseville. Both northbound and southbound shoulders will bc signed as "Bus Only" lanes and should be completed in September.

* I-35W southbound 26th Street to Lake Street; **46th** Street to 60th Street; 66th Street to 76th Street; northbound 76th Street to 66th Street; and 60th Street to 40th Street, All of these segments will be signed as "Bus Only" lanes and should be completed in November.

* I-94 westbound County Road 8 1 to Weaver Lake Road will be signed as a "***Bus Only***" lane and will be completed in July,

Ramp Meter Bypasses

Ramp meter bypasses for HOV will be constructed at the following locations:

* Westbound Highway 36 to southbound I-35E in Little Canada (Completion: July)

* Lake Drive to southbound in Blaine (Completion: October)